



University of Toronto

MEDICAL JOURNAL

VOL LXII

NO.1



Feature Articles:

- Changes of the Undergraduate Medical Curriculum at the University of Toronto
- General Psychiatry

This issue is dedicated to the late
Dr. Edward Llewellyn-Thomas

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University of Toronto

MEDICAL JOURNAL

Established 1923. An Undergraduate Publication

Volume LXII, Number 1, November 1984

Contents

In Memoriam: Dr. Edward Llewellyn-Thomas <i>W.H. Francombe</i> 5 Editorial Passive Smoking <i>Vincent W.S. Lai</i> 7 Feature Article: Medical Education Some Personal Reflections on Changes of the Undergraduate Medical Curriculum at the University of Toronto <i>Barry Zimmerman</i> 9 Medical Education: The Dean's Task Force on Stress in Medical Students A Progress Report <i>George K.B. Sándor</i> 14 Feature Article: Psychiatry General Psychiatry — Some Personal Reflections <i>Dennis J. Kussin</i> 18 Psychiatry Gender Dysphoria; Insight into Transsexualism <i>Bruce Pipher</i> 21	Paediatrics A Consideration of Psychosocial Aspects in the Treatment of the Burned Child <i>Heather Volkert</i> 26 Plastic Surgery A Historial Review of Microvascular Surgery <i>Bruce R. Pynn and John C. Marotta</i> 34 Case Report: Plastic Surgery Fournier's Gangrene <i>Paul Joo and Walter J. Peters</i> 38 Commentary: Medical Technology On The (Mis)Use of Technology In Health Care <i>John S.D. Suen</i> 43 Book Report Notes From The Underground Surviving Medical School: Reviewing The Literature <i>P.A. Stewart</i> 44 Patrons 48
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During your undergraduate years, the Association was involved with providing financial assistance (scholarships, bursaries, travel grants, fellowships, loans) as well as sponsoring programs that were of particular interest — General Practice Panel, Arts and Letters Committee, Undergraduate Affairs, Graduation Banquet, etc. Now that you have graduated, the Association is still able to offer financial assistance in form of bursaries and loans; as well as being your representative at the Faculty and University level.

At the Faculty level, there are two representatives on the Faculty Council, a representative on the Admissions Committee, and the Chairman of the Student Aid Committee is a representative on the Student Awards Committee.

At the University level, the Association has two representatives on the University of Toronto Alumni Association, two representatives on the College of Electors, and a representative on the Varsity Fund Executive Committee.

We are also represented on various Search Committees when Department Chairmen and the Dean of Medicine are being sought.

During the past three years the Association has been involved in collecting funds on behalf of the Faculty of Medicine (Update) to support and expand a Continuing Education program. This program will become increasingly more important if the College of Physicians and Surgeons decides to incorporate the need to re-license physicians every five years. Government funding has been decreased for existing programs, and there is no provision for the incorporation of new ones.

The Association is also involved in providing some impetus to five year reunions. Two letters will be sent free of charge, for each class celebrating their reunion. Every attempt is made to keep an up-to-date address list of all our graduates. Please remember to notify YOUR Medical Alumni Association of any address change.

The Association is governed by graduates who give their time and talent voluntarily. There is one full time employee. Donations given for Student Aid are used entirely for that purpose; and the donations given on behalf of the Faculty of Medicine Update are turned over to the Faculty without any administrative charge. Trust funds are administered, without charge, following the direction of the donor.

If you are interested in serving on the Executive Committee, or would like to have your opinions voiced to the proper authorities, please do not hesitate to contact YOUR Medical Alumni Association.

Above all, consider it an honour to be invited to attend the Medical Alumni Association and to help those who are coming after you.



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Editor's Message

It is with great honor that I may be involved with this the 62nd year of publication of the *University of Toronto Medical Journal*. This year we have increased our circulation over the past academic year and now are distributed to areas such as the U.S., South America, Europe and Asia as well as to all the medical schools across Canada.

The First issue of the 62nd volume is dedicated to Dr. E. Llewellyn-Thomas — a great man who has contributed immeasurably to medicine and medical education. Articles by Dr. W. Francombe and by Dr. Thomas' children, Carol, Ned and Roland, together with one of Dr. Thomas' own poems reveal the man as scientist, engineer, physician, teacher, father and literary scholar.

In one of the feature articles of this issue, Dr. B. Zimmerman recollects on his student days and expresses his concepts of medical education. In the other feature article, Dr. D. Kussin discusses the role of psychiatry in medicine. Articles by medical students range from psychiatry to plastic surgery.

Vincent W.S. Lai

GUIDELINES FOR PUBLICATION

1. All articles intended for publication should be submitted to the editors before the deadline which is usually six weeks before the release of the Journal.
2. Submitted articles should be typed (or legibly printed) double-spaced, single-sided on paper 8½" × 11" (letter size) and they should not be more than 20 to 30 pages (5000 to 6000 words).
3. Illustrations, graphs, diagrams and figures should be put on a separate sheet and identified by Arabic numerals. A list of explanatory legends for all the figures and diagrams should be put on another sheet. Do not write on the back of photographs.
4. References should be checked with the original sources, designated by raised Arabic numerals in the text, and listed in alphabetical order on a separate sheet. Each periodical reference should include in order: the author's last name and initials, title of the article, journal name, volume number, page number, and year (e.g. Risser JC: Scoliosis: Past and Present. *J. Bone and Joint Surg* 46 A: 167, 1964). For further information please consult the MLA Stylesheet.
5. The editors reserve the right to make changes as they see necessary to ensure correctness of grammar and spelling and clarification of statement and conformity. Those views expressed in the commentary do not necessarily reflect the views of the Journal staff.
6. Acceptance for publication is subject to the understanding that such material is submitted solely to the Journal and will not be reprinted without the consent of both the editors and author.
7. Two copies of each article are required.



Dedicated to EDWARD LLEWELLYN-THOMAS
M.D., C.M., P. Eng., F.R.S.A., F.R.S.C.
Late Associate Dean, Faculty of Medicine

(1918 — 1984)

Dr. Edward Llewellyn-Thomas

Dr. Edward Llewellyn-Thomas died 5 July 1984 only a few days after his retirement as Associate Dean for Student Affairs. He is survived by his wife Ellen, three children, Caroline, Roland and Ned and a host of friends.

Dr. Llewellyn-Thomas, or "Tommy" as he was known to many, was born in England in 1918. He studied Engineering at London University and at the outbreak of World War II in 1939 joined the British Army and served with the Royal Electrical and Mechanical Engineers in Gibraltar, North Africa and the Far East. For a time he was attached to the British War Office and it was while he was attending a Staff College course in Virginia that he met his wife Ellen. They married in 1947. That same year he was demobilized from the army. He was in Malaysia at the time and stayed on in Singapore to work in telecommunications. While in Singapore he decided to pursue training in Medicine. He was clearly ahead of his time in planning to combine a career in Medicine and Engineering.

In 1951 Tommy and Ellen moved to Montreal where he entered McGill Medical School. While in medical school Tommy was employed as an Electrical Engineer at the Montreal Neurological Institute where he worked with some of the giants of neurological science such as Jasper and Penfield, at that time engaged in their pioneering work on mapping electrical activity of the brain. Ellen recalls Tommy constructing some of the recording devices on the dining room table. He often remarked that he considered himself privileged to work in such an environment while a medical student, and I am sure it was that experience that later made him so eager to encourage students to participate in research while undergraduates and gave him such an open-minded approach to undergraduate medical education.

Following graduation from McGill he interned at the Queen Elizabeth Hospital in Montreal and during that time decided he wanted to work as a general practitioner in a small community in order to experience as much as he could of the breadth of the practice of medicine. Always one to make an unusual choice, he for two years practised on a small island in the Bay of Fundy, often travelling in a fishing boat to other islands to visit patients. Never one to neglect science, Tommy, while a general practitioner, also worked as a Research Associate in the Department of Social Psychiatry of Cornell University taking part in a major project designed to study psychiatric illness in small communities.

Following this period of general practice he moved to Toronto to join the Defence Research Medical Laboratory. A gifted scientist with a wide range of interests, he explored various aspects of aerospace medicine. He was particularly interested in psychopharmacology and how man responded

to his environment. He developed a special interest in eye movements and it is worth noting that his personally designed head-camera constructed to record eye movements was used as the cover illustration of an issue of *Scientific American* devoted to the study of eye movements.

He joined the University of Toronto as a part-time lecturer in Pharmacology in 1959 and became a full-time member of the Faculty in 1963, and here pursued his research in Pharmacology and Biomedical Engineering. His unusually wide interests are reflected in the range of academic appointments he held. In addition to his appointment in Pharmacology he was Professor in the Department of Biomedical Engineering in the Faculty of Applied Science and Engineering, and was at one time a Lecturer in design in the Ontario College of Art and a Professor in the Psychology Department of the University of Waterloo, where he taught the first course in Canada on Human Factors in Engineering. He also pursued his clinical interests and held appointments in the Department of Family and Community Medicine at Woman's College Hospital and in the Department of Anaesthesia at the Toronto General Hospital.

The author of over 60 scientific papers, he published in addition 5 science fiction novels and a number of poems, truly remarkable achievements.

He was a member of the Institute of Electrical Engineers and at the same time a member of the Royal Society of Arts. He was a member of the Human Factors Association of Canada and served a term as the President of that organization. In 1974 he won the Engineering Medal, a major award from the Association of Professional Engineers. He served as consultant to the Royal Ontario Museum, the Ontario Science Centre, the World Health Organization, the National Research Council, the Medical Research Council, the Defence Research Board of Canada the National Design Council and several other major firms and government agencies in Canada and the United States. His election as a Fellow of the Royal Society of Canada was in recognition of his outstanding contributions to science. Always active, he was at the time of his death preparing a submission to the Federal Commission investigating the Ocean Ranger disaster.

Throughout his career he was known as an excellent lecturer but in addition he developed a real interest in undergraduate teaching. He demonstrated this interest by his active participation in the reorganization of the undergraduate curriculum in the late 1960's and for several years served as Co-Ordinator of Period I. Not only was he interested in teaching and curriculum, he was interested in the individuals involved in the process, the teachers and the students. His particular talents with people, students especially, were recognized in 1974 when he was appointed

Associate Dean, Undergraduate Affairs, a position he occupied with distinction until his retirement in June of this year. Throughout those years as Associate Dean he touched the lives of many; to the students he was counsellor and friend, but most importantly a friend to whom they could turn for advice in personal and academic matters; to faculty members he was also a wise counsellor whose broad experience could be brought to bear on a wide variety of issues. The Board of Examiners in particular turned to him repeatedly for his opinion regarding students in academic difficulty and he could be depended upon to provide sound advice. For all his success in research he was proudest of the years in which he served the student body. In all his activities he demonstrated warmth, compassion and humour. An academic who always pursued excellence and who demonstrated his pleasure with a student's excellent performance, he always recognized the need for physicians to possess personal qualities that would allow them to practise with warmth and understanding. He was proud of his students. He taught ethics by his personal behaviour long before it became a popular topic in the Faculty.

I was fortunate to have worked closely with Tommy during recent years and I, like many, mourn his passing but I think it is possible at the same time to celebrate his life, a life in which he used all of his considerable talents to advance knowledge and to act for the benefit of others. I am pleased to report that the Faculty has established a Memorial Fund in Honour of Dr. Edward Llewellyn-Thomas, a fund that will be used to support activities that will truly reflect his deep interest in the undergraduate student body.

W.H. Francombe, M.D.

The following was written by Dr. Thomas' children.

FOR BAPA

Like all little children, when the three of us were small we thought our father was the best, bravest and smartest father there was. We still do.

There were moments of doubt, of course — when he quoted too much poetry at us, his captive audience at supertime; or when he embarrassed us as teenagers by holding hands with Mother in public (we always stayed a good twenty feet behind them while they walked along, pretending they belonged to other children, not us).

He could be unreasonable. He expected us first to learn Greek at the dinner table, then, when that failed, Latin. We remember nothing of those Greek lessons, and only two quotes in Latin: "Through struggle to the stars", and "Don't let the bastards grind you down". Each useful in its way.

And he did remind us once too often of his sufferings as a boy at school — the chillblains on his fingers, the ice on the water basin in his bedroom when he woke up in the morning. But later, when Ned went to the same school, Bloxham, for a year he found it was all true.

When we were little we always said, "Ask Bapa. He'll know." He always did. As we got older and more opinionated it was easy to forgive him for knowing everything because he was so loveable and loving. And because he was

so interested in what we said, whether or not he agreed with us. He loved to talk with people our age; it was one of the great joys of his life and work.

He loved us, and we knew it. And to make us even more secure we knew that he loved our mother. Their marriage was a truly passionate one; each of them meant the world to the other.

It's too late to say these things to Bapa again. We hope we said them when he was alive — and if we didn't, that he knew it anyway. But we want to say them one more time, to our mother, and to all his family and his friends. To say that we were so proud of him in so many ways: because of all that he accomplished in his work and in his writing; because he had more energy than anyone we know, and gave so freely of it; and because he was an honourable man and a good man, and put those two qualities to work throughout his entire, strenuous life. He never criticised us and he never doubted us; he only loved and was proud of us. He was our dear, dear father. And we miss him.

*Caroline, Roland and Ned
July 10, 1984.*

Few medical students know that Dr. Thomas was an author and poet. The following is one of Dr. Thomas' own poems.

OTHERWISE I'D GO SAILING

I listen while the rest debate
The value of my work, and hear
How physicist and engineer
Should be employed to fabricate
Systems of solid social weight,
And not allowed to pioneer
Ionic drives, or plans to steer
Our probes into the desolate.

And I admire the erudition
Of academic, politician,
And psychosociologist.
But there's one aspect which they've missed:
I only spend my skill on schemes
Which satisfy my private dreams.

Edward Llewellyn Thomas

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Passive Smoking

Vincent W.S. Lai, 8T6

Considering the unfortunate statistic that 25% of deaths in Canada among men 25 and over are attributable to smoking¹, should non-smokers be rest assured that they are not subject to the higher risks of smokers? Indeed Not! Researchers have linked passive smoking (or the involuntary inhalation of sidestream smoke) with increased incidence of many respiratory disorders as well as implying its direct role in the causation of disease.^{2,3}

An analysis of the composition of tobacco smoke shows that sidestream smoke contains much higher concentrations of many toxic and carcinogenic substances than the mainstream smoke inhaled by smokers. According to recent reports of the U.S. Surgeon General⁴, sidestream smoke contains 73 times the amount of ammonia, 2.5 times the amount of carbon monoxide and 2.7 times the amount of nicotine as mainstream smoke.⁴ One of the most potent carcinogens known, N-nitrosodimethylamine (NDMA) is present in sidestream smoke at a concentration 50 times greater than that in mainstream smoke⁴; in fact, cigarette filters remove much of the NDMA from mainstream smoke so that smokers are more protected! 2-naphthylamine and 4-aminobiphenyl, both known to be human carcinogens, are banned from exposure or contact with man by the American Conference of Governmental Industrial Hygienists; in other words no safe level of exposure to these chemicals exist in the workplace. However, both these chemicals are in tobacco smoke and concentrations of 2-naphthylamine and 4-aminobiphenyl are greater in sidestream smoke than mainstream smoke by 39 times and 31 times respectively.⁴

Clearly, sidestream smoke contains many harmful substances; but, in normal social settings, is the amount of this sidestream smoke sufficient to affect the health of non-smokers? Studies have shown increased Carboxyhemoglobin levels in passive smokers exposed to smoky environments^{5,6} as well as salivary and urinary nicotine in non-smokers sitting next to smokers in a typical working environment.⁷ White and Froeb reported that non-smokers chronically exposed to tobacco smoke (using carbon monoxide as an index of exposure) had a lower forced mid-expiratory flow rate and forced end-expiratory flow rate than non-smokers not exposed. They also found that these values in passive smokers were very similar to those in people classified as light smokers as well as smokers who did not inhale.⁸ Tager et al reported similar respiratory function impairment in children with parents who smoke.⁹ In a 14 year longitudinal study, Hirayama reported that non-smoking wives of husbands who smoke have an increased risk of developing lung cancer, emphysema and asthma which showed a dose-response relationship; the wives' risk of other diseases such as stomach cancer or cervical cancer did not depend on the husband's smoking habit.² Trichopoulos et al estimated that the relative

risk of lung cancer in women was 2.4 times higher if their husbands smoked less than one pack of cigarettes a day and 3.4 times higher if their husbands smoked greater than one pack a day.³ Aronow reported that passive smoking increases the susceptibility of angina pectoris patients to anginal pain on exertion.¹⁰

Thus, there is mounting evidence that passive smoking has many deleterious effects. How effective are measures to protect the non-smoker from sidestream smoke? To answer this question, all one has to do is sit in the "non-smoking" section of the local cafeteria and experience the sensation of suffocation from the sidestream smoke emitted from the overcrowded "smoking" section. A more vigorous campaign should be conducted to eradicate smoking perhaps through educational and legislative measures. Wouldn't a smoke-free world with less cardiovascular and respiratory disease be a better place to live?

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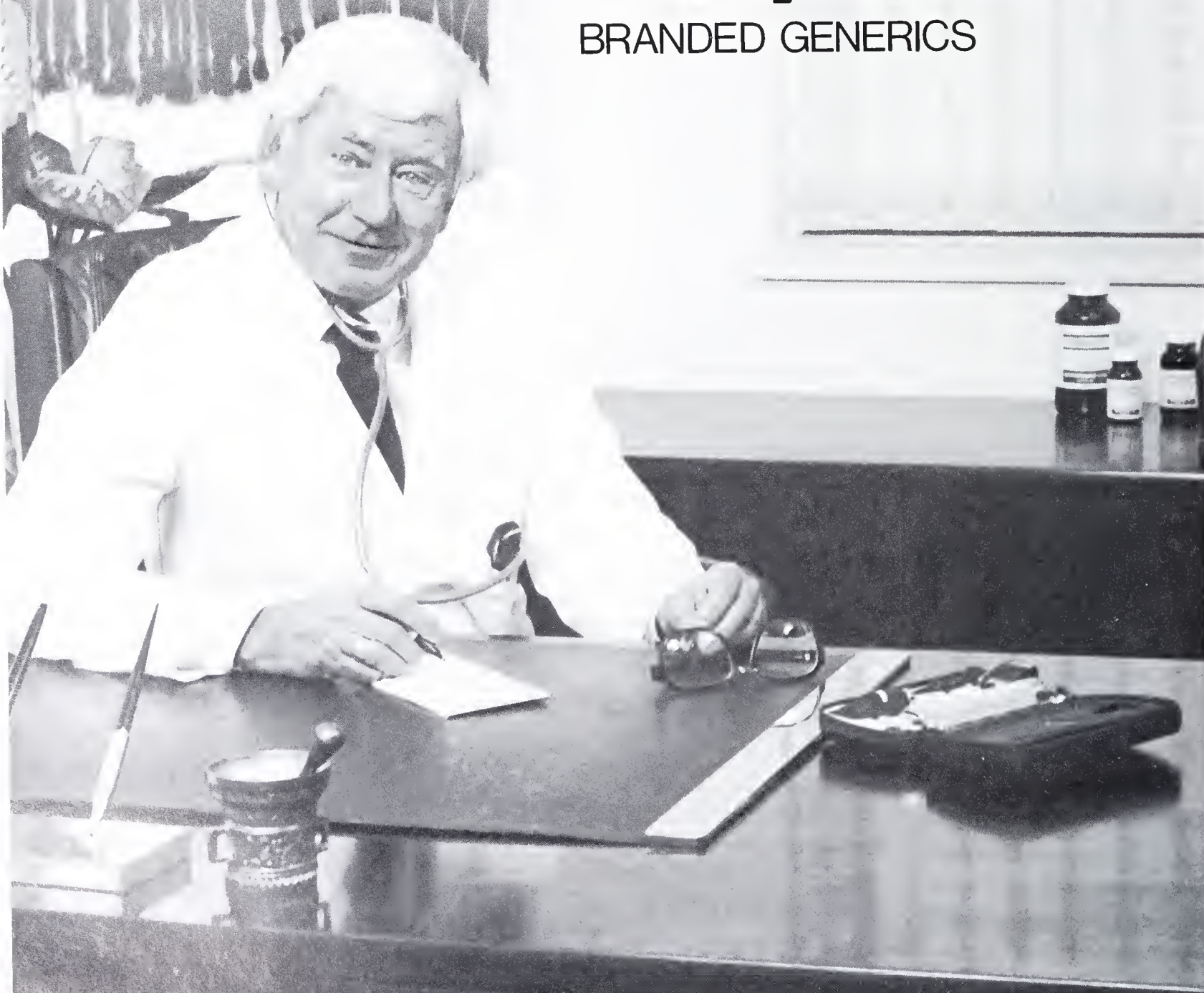
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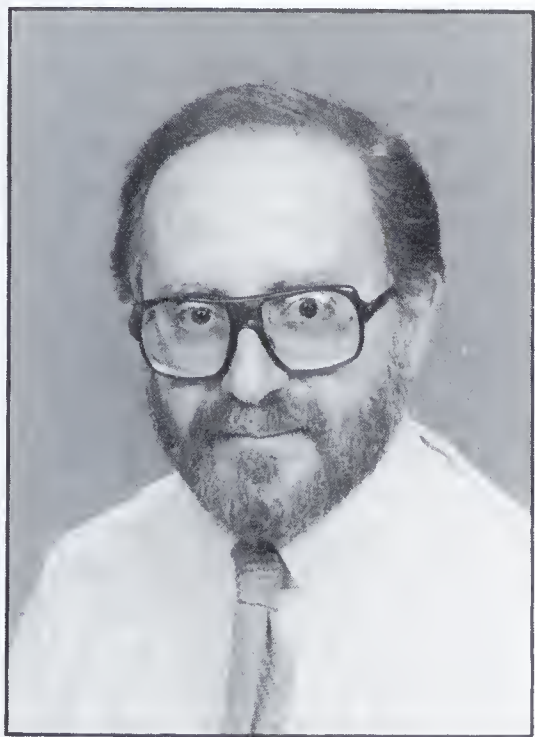
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Some Personal Reflections On Changes of the Undergraduate Medical Curriculum at the University of Toronto

Barry Zimmerman, M.D., F.R.C.P.(C)



Dr. Zimmerman, M.D., F.R.C.P. (C), is Associate Professor of Paediatrics at the University of Toronto and Chief, the Division of Allergy, The Hospital for Sick Children, Toronto. He graduated from the University of Toronto in 1965. His current research interests are the cellular regulation of the IgE immune response.

We are now in the midst of a renewal of the undergraduate curriculum, a process that leads to much trumpeting, snorting and pawing of the ground by various faculty members responding to instinctive territorial imperatives. As a minor contribution to the debate that is currently raging over "fact" overload, "fact" underload, "fact" preload and "fact" afterload, the editors have asked me to describe the teaching system at McMaster University Medical Centre. Many of the buzz words now being bandied about by the curriculum renewers, including problem-solving, self-directed learning, small-group learning etc., are those associated with the experimental teaching system at McMaster. By contrast, the mere mention of the word McMaster, let alone self-directed learning, drives those faculty who consider themselves friends of the current curriculum into paroxysms of outrage.

My qualifications for writing this treatise are no more than that I taught immunology for many years on the faculty of the University of Toronto prior to returning to a residency pro-

gram in paediatrics in mid-life. I then joined the faculty of McMaster University for two years before a recent return to Toronto. Having taught on both sides of the 50-mile great divide, I am struck by the fact that the two faculties have diametrically opposed views of the correct way for medical students to be educated. At McMaster, the University of Toronto is regarded as that "great lumbering dinosaur down the road", the repository of "classical" medical teaching and all that is stultifying about the classical system. In the reverse direction, many faculty at Toronto regard McMaster as an experiment gone awry, a misguided medical school graduating half-trained, medically-illiterate practitioners.

At the outset, I intend to plagiarize shamelessly from an article written in the University of Toronto Medical Journal, April 1984, by Dr. Robert K. Murray of the Biochemistry Department. In fact I have even brazenly stolen his title, but have omitted his erudite Arabic proverb on cows and calves since some might feel my contribution owes not a little to the intestinal ruminations of such cows. Dr. Murray talks fondly of the year 1961 when he recalls trying to convey in a lecture to the first year students some of the excitement generated "when Nirenberg and Matthei spectacularly laid the ground work for the solution of the genetic code." I remember those lectures well, since I was in that class. I also remember that Dr. Murray succeeded magnificently in conveying this excitement. I distinctly remember the handouts he passed around on the genetic code, including a little foot-note that this handout should not be passed to other biochemists so that they would not learn our little secret. We were even naive enough to have heated discussions about whether he was seriously trying to keep this information secret from other biochemists in Toronto.

It is something of a paradox then that Bob Murray, an excellent and innovative teacher, is defending the very system that led a break-a-way group of Toronto radicals from the same era to found a medical school with an entirely different vision. This group also included some of the finest Toronto teachers, teachers who could mesmerize entire classes of students including John Evans, the first Dean of McMaster and one of my attending cardiologists on Ward G at the Toronto General, Bill Spaulding, Chief of Out-Patients at the Toronto General and Jim Anderson, a wonderful anatomist at U of T. How is it possible then that Bob Murray remembers "that period with some fondness", when students with high

morale worked diligently in the laboratory performing 130 hours of biochemistry labs while several other faculty had the view that these 130 hours were being mis-spent performing rote experiments in a rote fashion resulting in mechanistic, fuzzy-thinking physicians? As always, it is safest to opine that the truth probably lies somewhere in between. While some students worked diligently and attempted to reproduce these little experiments faithfully, others routinely bought notes from individuals in the year before them and "cooked the laboratories". Because each of these little lab reports was graded, the laboratory notes of the better students from the year before were widely sought after. Perhaps Bob Murray's eyes were on the students who were actually enthusiastically doing the experiments, while John Evans et al were seeing the other group of students who were busily donning their chefs' hats.

In fact, the biochemistry laboratories were interesting and were relatively up-to-date. In contrast, the microbiology laboratories were sheer drudgery and were already 20 years out-of-date by the time we performed them. We were still counting the number of tubercle bacilli in fields of sputum in order to arrive at a Gafky scale for virulence when tuberculosis was being successfully managed by a combination of public health measures and antibiotic therapy.

It is also not recognized today that the original McMaster experiments were being performed at the University of Toronto over 20 years ago by Jim Anderson in his own classes on physical anthropology. Each of us was given a novel research project in our second pre-medical year, and I remember Dr. Anderson handing me a cardboard box containing bones from an Indian infant and simply saying, "Tell me something about them." My project, and all of the others, were graded personally by Dr. Anderson. Over 20 years later, I still remember that project and over the years have even come to recognize why I failed to make headway. I clearly was not able to pose simple questions about the bones, frame them as problems to be solved, and then delve into the literature to research the issues. Dr. Anderson in turn made a point of not giving specific directions, while still giving encouragement to keep trying. I did not fully succeed and the report I came up with was what I would now regard as much less than "rigorous". Over the succeeding years I have often thought about this particular project and how I would now approach it differently. So it became immediately obvious when I joined the faculty of McMaster and was initiated into "the McMaster method" of medical education that Jim Anderson's experiment was now being played on a larger scale. Because I had thought about that project more than once over many years, I immediately recognized the "McMaster method" and had more than a little sympathy for the goals and objectives of the McMaster program. However, as an outsider not bound by the need to defend the faith, I also had a clear vision of the enormous difficulties inherent in applying the concept to such a large and awkward field of study.

Nevertheless, there are more than a few aspects that I regard as extremely worthwhile and would very much like to see them incorporated as a single course into the classical University of Toronto teaching in order to attempt to have the best of both worlds. The Core Selective Program now being devised is such an attempt.

Let me begin my description of the McMaster method by describing differences and similarities between McMaster and the University of Toronto medical students. Both are extremely industrious and very bright. Both have extreme insecurities but based on entirely opposite sides of the same coin. The students at both schools are quite conservative, the student bodies in general having passed through the great wave of radicalism of the 1960's, into the more placid eddies of the late 1970's, and finally into the raging insecurities of the 1980's. The University of Toronto students are obsessed with doing well on innumerable multiple choice examinations while the McMaster students are driven by the fear that they do not know enough. Fortunately, the students are the saving grace of both systems.

The McMaster philosophy is based on the concept that medical learning is an on-going process that must continue throughout the 30 years or so of a medical career and not simply as an intense bolus provided during the period known as the undergraduate years. Thus the philosophy starts with the rationale that since medical knowledge is increasing at a geometric rate and since medical truths are often out of date in a five-year period, it is more important for the student to practice the art of "learning how to learn" while in medical school than to be learning perishable facts. The responsibility for learning and continuing to learn the "facts" of medicine has been placed squarely on the student's shoulders. The student must first come to grips with the ability to identify what they must learn and then to go after this knowledge in the absence of any formalized lecture system. Furthermore, since each individual learns at a different rate, it is regarded as unfair and counterproductive to force them into the rigid patterns of learning necessary for sitting formal examinations. Clearly the McMaster student when faced with a large mass of medical knowledge and faced with the initial chore of learning how to approach and systematize that knowledge is at a disadvantage compared to his University of Toronto cousin in the acquisition of the factual side of medicine. There is no question that the McMaster student has a much smaller data base than the University of Toronto student, but even with this smaller data base the McMaster student is expected to attempt to use it and exercise it towards the solution of medical problems.

We have all experienced the examination-weary University of Toronto student asking the eternal question, "Why do I have to know this trivial junk? Of what use is this obscure immunology going to be when I go out into my office?" The McMaster student can never pose the question, "Why must I know this trivial junk?", since no one is telling him, or more correctly her, what trivial junk she must know. The McMaster student has in essence signed a contract indicating that they will take part in their own education and that they will be responsible for it. Clearly this is a very inefficient way of transmitting information, but I am struck by the attitudinal differences in the students. The Mac student almost begs for information, is invariably grateful for it afterwards, and takes great pleasure in acquiring it. The University of Toronto student has been forced by a steady diet of multiple choice examinations into a distressing foraging for trivia, with a resulting loss of the sense of mystery that the medical sciences can impart. I think Bob Murray was right 20 years ago when he was first telling us about the DNA code, that many of us

were indeed enchanted by medical science, and that currently, somehow this enchantment is being ground out of the University of Toronto student by the pursuit of disjointed knowledge towards comprehensive but trivial multiple choice examinations. This loss of wonder is occurring at a time when the most amazing discoveries are being made in that same DNA code. The McMaster student retains a sense of wonder, but there is still a clear problem that a student in a finite period of time cannot sufficiently identify the issues and research the burgeoning medical literature in all of the scientific disciplines. Thus they may never know what's out there.

How then does the McMaster student learn? All learning is through a problem-based approach using a tutorial system without any lectures. In each of the three undergraduate phases and even the phase IV, or clinical clerkship, the students are given a book of medical problems based on case histories through which as a tutorial group they must learn all anatomy, biochemistry, physiology, pathology, immunology, microbiology, etc., etc. They work in groups of 8 to 10 and during Phase I must come to grips with how to learn, how to identify the issues to be pursued from the problems, and how to interact with each other in such a way as to be supportive during this learning process. To make the transmission of facts more self-directed, the tutorial group is "facilitated" by an "inexpert" faculty tutor. Clearly no faculty member can know every aspect of every discipline, but their job is simply to facilitate the learning process and to keep the student on track without taking over. The great worry under such circumstances is best reflected by the ancient medical student aphorism for mastering oral examinations, "bull shit baffles brains". Yet, because the Mac students come with an extremely strong sense of responsibility for learning, they are often very good at sniffing out and squelching B.S. The few that use the system would be the same users in the classical University of Toronto system. Nevertheless, the McMaster student by Toronto standards wastes a lot of time attempting to identify the issues within a given medical problem and searching for resources. They spend much time as an untutored group trying to wrestle the various bits and pieces of knowledge into a comprehensive whole. The method is not as efficient as a lecture for transferring data, but perhaps, just perhaps, the student benefits by having to learn how to go after information. Perhaps this results in an increased ability to rank the issues involved in the problem and an increased ability to explore and research the issues in a self-motivated fashion. Perhaps the accomplishment of these goals leads to an increase in critical thinking by the students. Perhaps the absence of formal teaching by faculty forces the students to be dependent on the resources of themselves and their fellow-students, increasing their ability to learn cooperatively rather than competing. Perhaps also the students, by being dependent on their own resources, have to learn how to evaluate their own progress and are able to continue this self-evaluation throughout their career. Clearly the process by which a McMaster student learns medicine is the same one which must be employed by physicians in order to remain up-to-date throughout their careers.

Are these skills worth nurturing while the student is an undergraduate? If the answer is yes, then the development of an undergraduate experience based on "learning how to learn", where the student grapples with a particular subject

under the watchful eye of an expert but non-directive tutor, is in order. In fact, such a course, the Core Selective Program, is being developed at the University of Toronto, with the main goal being to allow the students an opportunity to synthesize and explore medical knowledge on their own while encouraged by interested faculty.

How well does the McMaster system work in practice? I will describe my observation of three facets of the McMaster system which I feel reflect some of its strengths. I will grant the standard Toronto catechism that the Mac student does not know anything until they get to Toronto, but then they pick it up very quickly. First, in my observations from the vantage point of paediatric attending staff, I found the McMaster clinical clerks were equal to the University of Toronto clinical clerks. Obviously there are some outstanding Toronto students who, with a very broad data base and an ability to synthesize data, are more medically skilled than the usual McMaster graduate. However, in general, the McMaster graduate thrives on medical problem-solving and never once asks why they have to know something.

While at McMaster, I also became the "immunology discipline coordinator" charged with the mission of upgrading the McMaster students' learning of immunology. I approached my mission as a problem in need of solving. First I needed to examine how the McMaster students were intended to learn the discipline of immunology, and then examine what they actually did, and finally examine the degree that they successfully achieved the learning of immunology. I immediately found that this was not an easy task since there is absolutely no formal record at McMaster of whether or not a given student has learned any immunology. Only the individual tutor might know whether immunology was touched on during the course of their tutorials, but because of McMaster's inordinate fear and loathing of anything that reflects the University of Toronto's obsession with examinations, the keepers of McMaster purity avoid any records that even hint at the suggestion of formal evaluation of students. By contrast of course, the students repeatedly evaluate and assess the faculty.

To determine the opportunities for student learning of immunology, I read through their various problem books and found that there were several problems touching immunity, including a paediatric patient with streptococcal pharyngitis leading to rheumatic fever and another problem based on a youngster presenting with acute streptococcal glomerulonephritis leading to the complication of renal failure and finally transplantation. Subsequently, in a session which I gave to four groups of 25 students that would approximate a University of Toronto immunology tutorial, I was able to determine within each group how many people remembered studying an immunology-based problem. In fact, better than 90% were able to describe working on one of the immunology related cases. However, in my tutorial session it was apparent to me that very few of the students actually knew any immunology. This was very reminiscent of the University of Toronto student a year after taking their course in immunology. However, with the McMaster student, it was not clear whether the lack of knowledge was due to forgetting or due to never having dealt with it. In order to assess this aspect I sat in on sessions in which several of the tutorial groups had requested an immunologist acting as a resource

person. It was apparent from these extra sessions that at least some students were initiating their own learning through the impetus of the medical problem and were pursuing immunology to a very credible depth. From the perspective of a University of Toronto student, it was clear that the McMaster students could never approach immunology to the depth of a University of Toronto student who has the help of a course syllabus and lecture series. On the other hand, I have believed for some years now that a major problem exists in the teaching of immunology at the University of Toronto in that students are not able to effectively apply basic concepts of immunology to patient situations.

My final anecdotes about McMaster which suggests there are aspects which are worth appropriating to the University of Toronto occurred when several students who were no more than one or two months into the medical curriculum chose to do an elective in paediatrics. I was the happy witness to a group of fresh young individuals going to the ward and trying to wrestle with the taking of a history and the making sense of a medical problem prior to their ever having come in contact with physiology, pathology, biochemistry, etc. etc. I was bowled over by the enthusiasm of the students and amazed by their thirst for the knowledge necessary to deal with what they were hearing from living patients. I watched students who had barely entered the medical school wrestling with obtaining an adequate history of present illness and watched them come to the realization that they *wanted* pathology, they *wanted* physiology, they *wanted* biochemistry to be able to make sense out of a patient's illness. They could not wait to hit the books and fill in the gaps in their knowledge. Furthermore, once they became adept at taking a history, which occurred reasonably quickly, it was then a pleasure to watch their enthusiasm in trying to wrestle with what the history might mean and how they could find information in textbooks that would help them to interpret what they were hearing. I came away a firm believer that students should see patients right from the beginning of their entry into medical school before their sense of wonder has been dulled by the need to cope with voluminous amounts of information.

If I was impressed with anything comparing the McMaster system to the University of Toronto, it was the difference in student outlook when the quest for knowledge is student-initiated as opposed to faculty-initiated. Certainly I recognized Jim Anderson's experiment on our medical class over 20 years ago and saw the same enthusiasm generated then and now. As a result, I firmly believe that there are aspects of the McMaster system which are worth emulating and introducing at the University of Toronto. An initial and fairly gentle attempt to do so is being formulated through the Core Selective Program being introduced as a compulsory course for the students of U of T. The Core Selective will be based on small group learning experiences with students attempting to initiate and direct more of their own learning. The experiment however, will differ from the McMaster approach in that the faculty will be experts in the particular field and will be a little more directive in order that the students find their way into the subject faster. Because of fundamental philosophical differences between the University of Toronto and McMaster University, there will be an examination in an attempt to deal with the question of academic rigor. Faculty

have been asked to propose various topics that they would tutor small groups in and have responded enthusiastically. At the present time, these proposals have a wide range in teaching approach from didactic to student-initiated. However, for the first time, the University of Toronto will attempt to introduce a workshop for the faculty involved, in order to first teach the faculty what would be expected of them in a novel teaching experiment. It is often very difficult to keep expert tutors from dominating a group of novices and the faculty will need to be encouraged to back off. Nevertheless, the program goals for the Selective Program, which will include a strong emphasis on "learning how to learn" rather than the content being learned will be a small tentative step towards introducing student-initiated learning.

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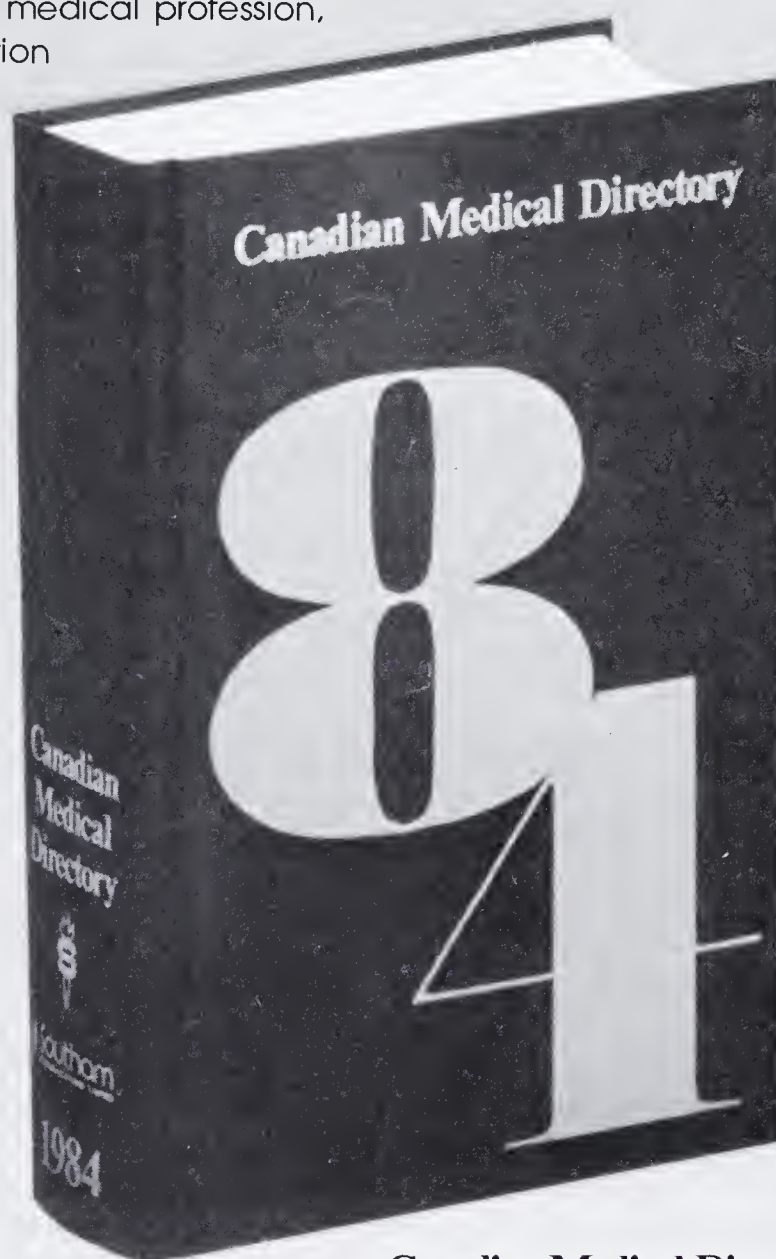
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The Dean's Task Force on Stress in Medical Students A Progress Report

**George K.B. Sándor 8T6*

The Task Force to Study Stress in Medical Students was established by Dean F.H. Lowy in the Spring of 1983 with the following terms of reference:

1. To assess the extent and severity of the stress experienced by students in the Faculty of Medicine.
2. To determine whether and how, Faculty admissions procedures, curriculum, examinations and general ambience contribute to students stress.
3. To identify other factors that are relevant.
4. To recommend steps that might be taken to reduce student stress.

A total of fourteen members were selected to work on the Task Force, which was chaired by Dr. E. L. Lansdown, Chairman to the Department of Radiology. The other members represent a variety of Faculty departments including the Department of Behavioral Science, the Department of Surgery, the Division of Studies in Medical Education, the Student Health Service and several representatives from the medical student body. The following progress report is a summary of interim findings that were submitted by the Task Force to Dean Lowy in July of 1984.

The Problem

It is generally conceded that participating in the undergraduate medical course as a student is a stressful experience. Learning a new vocabulary, a new way of thinking, dealing with disease processes along with the social interplay may initiate some degree of stress. In addition, the large knowledge base which must be assimilated over a short period of time to make sound diagnostic and therapeutic judgements acts as an additional stressor and may lead to a feeling of "fact overload" among some students.

The Task Force attempted to determine the conditions and levels at which stress becomes undesirable, and even dysfunctional. A central question of two parts was posed:

Can the positive stimulative effects of stressors be optimized, and, does the Faculty have in place methods of adapting its special environment to help students who are unable to cope with stress?

This progress report on the Task Force's activities will not provide definitive or final answers. From the investigations conducted it is quite apparent that a crisis level of stress is not evident among students, yet many problems needing

closer examination and attention were uncovered.

Method

Six procedures were followed in pursuit of establishing a comprehensive collection of information and data base concerning stress, its sources and consequences and its remediation or removal.

The Task Force met during the year on fourteen occasions in order to discuss generally the problems of stress and the state of received knowledge on the subject, and to analyze and evaluate the information and data gathered. Attempts were made to assess the services at an individual, departmental, Faculty and University level presently in place for the assistance and counselling of students seeking advice.

A preliminary aggregation of current literature on student stress was assembled, read and reviewed by the Task Force.

A number of Faculty members were invited to offer their views, experiences and in some cases, research findings on stress to the Task Force.

One of the Task Force's major activities involved the creation of a 95-item student questionnaire as a follow-up to an earlier student-sponsored document published in 1981¹. While the earlier study was created primarily to gauge student mood and involvement, the present questionnaire was expanded to take into account student background, medical school experience, lifestyle, finance, factors affecting student health and various items that made up the working life of a medical student.

Another facet of interest was the creation of a 9-item staff questionnaire leading to a series of interviews. Included in this protocol were questions which elicited staff observation as to student stress, how stress might be ascertained and what possible effect it has on the student population. Other opinions were sought, including whether there was too much student stress, what factors led to strain and lastly what action could be taken by faculty members of the medical school to reduce stress.

A variety of students also appeared before the Task Force to offer their views and experiences of stress. A particular focus on students who represented peer groups likely to be at risk to unique sources of stress was taken by the Task Force.

* Student Spokesperson for the Dean's Task Force.

PRELIMINARY FINDINGS

Testimony of Faculty Members Engaged in Parallel Student Assessments

It is the unanimous opinion of those who have looked at the topic as well as our undergraduates, that the unusually large size of the undergraduate class of the University of Toronto in itself causes a great deal of stress. There is less chance to develop a small group learning situation, emphasizing that the student and teacher do not establish a very firm bond. In addition there is a vast heterogeneity of backgrounds in our student group which again causes some anxiety.

In testimony a faculty member stated that between 3 and 5% of an undergraduate class requires intensive counselling and that a further 10% need regular counselling for various lengths of time. It is rather surprising that centralized counselling services see much smaller than expected groups of students each year.

The issue is whether students experiencing stress do not seek help or whether confidential individual services available to these students are unknown. One point, repeatedly made, is that students are afraid to divulge their stress because of a belief that they may be stigmatized with consequent threat to their success in medical school.

Finally, academic staff were convinced that there exists a strong peer group who are willing to help students in difficulty. Moreover students emphasized the benefits of smaller group teaching as occurs in Anatomy and in some clinical training. These situation afforded students with the opportunity to get to know their peers and teachers more intimately and thereby establish a more supportive environments.

The University Advisory Bureau.

Discussions with the Acting Director of the University Advisory Bureau, a non-medical counselling service, indicated that some 500 students from all parts of the University are counselled each year, suggesting an under-representation of those who are potentially in difficulty.

In the Bureau's experience, stress arises principally from four areas: low self-esteem, uncertainty, excessive workload and inadequate social support. It has been pointed out by others that the lack of a confidant is felt by many students and is a serious break in the support mechanism.

Student Questionnaire

The questionnaire was administered during class time donated by various departmental lecturers through the week of March 5, 1984. The student questionnaire was also answered by clinical clerks at the various teaching hospitals. There were several follow-up opportunities in each year in order to maximize the response.

The response from the four years was gratifying, amounting to approximately 85%. In the future this will allow a significant comparison from year to year as well as breakdown into important parameters such as gender, age and social background. Detailed computer analysis has not yet

been completed. A few interesting points have been noted on initial analysis.

Concerning course content, over half of the students feel that lab sessions are the least productive learning experience, while less than a quarter indicated that electives and selectives are the most productive learning experience. Students indicated their preference for short-answer questions over multiple choice or long essay type questions.

Half of the students have never considered dropping out of medical school but those that have list among the greatest influences a disillusionment with medicine and a feeling that the sacrifices of medical school outweigh the benefits.

Over half the students live with a spouse, cohabitant, parent, guardian and/or other relatives, whereas less than a quarter live alone. Over 80% of the students find it difficult to maintain or establish friendships outside of medicine. This emphasizes the degree of dedication and isolation caused by this milieu.

Of some concern is the fact that over one quarter of the class is not satisfied with the condition of their physical health and well being. One third of the students list their health as fair to poor. Although a quarter of the students have considered seeking professional help because of stress related problems, only about 10% actually have, with 5% finding it necessary to attend their counsellor more than once.

The greatest stress seems to evolve around the examination process. Stress is experienced overwhelmingly in association with final examinations and the inability to absorb all the course material.

Faculty Staff Interviews

A cross section of Faculty members nominated by Departmental Chairmen and supplemented by a number of curriculum officers were interviewed. It was believed that these individuals probably had more interest and exposure to medical students than did the average departmental member.

A few points are apparent on analysis of the initial part of the interviewing process. First, many of those interviewed actually feel that they have very little prolonged contact with the students and do not get to know them well. This is also reflected by the students themselves who have commented about this same problem. There is almost a universal feeling that often staff contact is brief, superficial and does not allow a relationship to develop that could reflect concern or confidence.

Second, many of the staff were amazed and concerned about the level of competitiveness and preoccupation with marks shown by the students. It has been pointed out that very few students fail their year and most do well on supplemental examinations and in remedial sessions in senior years.

Competitiveness and preoccupation with marks is an understandable reaction considering the basis of student selection. There has been a tendency to choose those with top marks, by definition half of these students must now be allotted a standing below the class median. In addition the perception of fierce competition for choice residency positions also emphasizes the importance of top marks.

Undergraduate Curriculum.

There has been a serious attempt to space examinations, and use a comprehensive method of assessment rather than a multiplicity of examinations. With this, changing attitudes have evolved regarding the elective process and attempts have been made to introduce students to a clinical setting earlier in the curriculum.

While attempts to lessen "fact overload" have been laudable, some of the students and staff have found the change in format over the past year stressful in itself. Staff complain of early examination question submission where questions apparently were changed by central authority without consultation. Students have suggested that the outlines of course content were not adhered to and indeed not examined.

A further source of preventable student examination stress arose in the past from logistical problems such as the distribution of grossly incorrect answer keys following certain multiple choice examinations. These incorrect answers caused a number of students an unnecessary ordeal during already stressful final examinations.

STUDENT INTERVIEWS

The Admissions Process

On reflection, many of the undergraduates indicated that the most stressful part of the whole educational process was the pre-application preparation and the admissions process itself. It has been pointed out however that the University of Toronto system is somewhat less stressful than other Canadian faculties when one considers the lack of one or multiple interview processes. In addition our students acknowledge that the institution of a 40% non-academic criteria, based on the autobiographic sketch and letter, has lent a feeling that activities, other than scholastic, may be reviewed in assessing the total candidate. Deferment, allowing one to complete a degree before entering medicine without worrying about grades, lessens the tension for a few.

The Female Undergraduate

It would seem that most of the Faculty's role models are male and the female interviewees feel that they yearn for closer contact with female physicians and also feel that there should be greater female representation in administrative roles both in the central faculty and at the hospital level.

It is perceived by the female students that our culture has brought them up to be less aggressive than males, a distinct disadvantage when entering the competitive undergraduate milieu. Several students indicated that development of an adaptive aggressiveness and feel that solutions to difficult situations include at least three possibilities:

1. to become more like men.
2. to take a radical feminist approach.
3. to use their femininity to their own advantage.

Testimony suggested that sexism on the part of the Faculty is not generally a serious problem, occurring occasionally in the clinical setting.

The dual role of the mother/student was described, outlining difficulties in time management, fatigue, community

obligations, childhood illness and the management of finances.

The Mature Student

A small but vital group of the undergraduate population consists of older students, often with advanced academic experience in other faculties. It was apparent that the sense of individual competition as well as the examination process caused a somewhat heightened sense of stress for this group. Some found, under these conditions, the presense of a family a very supportive feature.

To the mature students, the proper outlining of goals and objectives with qualitative features of course content was perceived as a deficiency in the current undergraduate curriculum. There was certainly a universal feeling that adjustments had to be made and study methods relearned in their particular situation.

Visible Minority Groups

Members of the undergraduate class representing African, Asian and East Indian backgrounds were interviewed. To a Canadian-born black, interaction with the black community originating off-shore, appeared somewhat more stressful than integration with the white population. The point was made that many Canadian whites automatically assume that a black person is an immigrant. There was no perception of difficulty caused by being black, possibly because of small numbers of this minority group in the Faculty.

It would seem that those of Asian ancestry tend to feel that they are viewed stereotypically in the academic community. There is a perception that they have been discriminated against in the past in the oral examination process.

The East Indian group feel a better sense of integration than in past years. It was mentioned that East Indian students are also concerned about oral examinations and would like to have the option of written examinations instead. Some of this concern stemmed in a small minority from a feeling of language incompetence.

Problems were discussed arising through the observation of the Jewish religion. This apparently was generally a minor problem, but did come to fore in the past year due to examinations being scheduled on certain Holy Days. Thus the stresses seemed to be associated not with overt discrimination but due to difficulty in keeping religious holidays on occasion and the inability of obtaining kosher food.

Clinical Clerks

While the questionnaire data suggested that both third and fourth year students experienced higher levels of stress, the clerks interviewed generally found fourth year to be less stressful than the earlier years in their undergraduate experience. Some services were picked out as being more stressful than others, usually based on attitude rather than the necessity for hard work.

The female clerks commented on the frequent lack of communication from the male medical staff and the fact that at times it was difficult to have patients develop confidence in the young female physician. They felt their gender was an

advantage in working with male staff. However, they reported difficulty in working with nurses.

Continuing Task Force Activities

Ongoing activities at present include a refined analysis of the undergraduate Task Force questionnaire material. Further computer-assisted breakdowns will refine the questionnaire data and a much more detailed and complete analysis will be the subject of a future report to The Journal by other Task Force representatives.

Parallel to the undergraduate questionnaire activities, analysis of staff opinion, using the interviewing protocol will be carried out. The committee will be able to assess staff attitudes and willingness to participate in more personal student interaction. Finally, note will be taken of staff opinion as to how to optimize the undergraduate experience.

A detailed analysis of counselling services available within our Faculty as well as the University will be carried out. It has become apparent that underutilization of services arise because of a lack of information available on the location of these facilities.

The recommendations of a report by the Chairman of Academic Affairs of the Medical Society entitled "Effects of Stress on Physicians/Medical Students: A Possible Solution." have been received by the Task Force. Suggestions such as the establishment of a stress prevention programme with a possible multidisciplinary approach will be considered. Such a programme could include seminars for students on stress management, time management, addiction awareness and support system analysis. Programmes currently in place at

other medical schools will be studied.

The undergraduate questionnaire indicated that examinations were associated with a considered amount of stress. For this reason the examination process will provide one focus for future discussion in Task Force meetings.

With the accrual of additional information, it is the goal of the Task Force to provide a comprehensive analysis and report recommendations to the Dean in the fall of 1985.

Summary

While it is quite apparent that the vast majority of the medical students are doing well and coping quite adequately with various stressors found in the undergraduate experience, nonetheless, there is a distinct feeling that much can be done in order to optimize that undergraduate experience.

The Task Force is concerned about the disillusionment with medicine that some of the students feel, the high proportion (80%) of students who find it difficult to maintain friends outside of medicine, the sense of poor health and the small proportion of students who seek help.

Clearly the examination process and the pre-occupation with grades are major contributors to stress. The superficiality in student/staff relationships poses another issue for resolution. Finally, there seems to be an apparent incoherence in the services offered to students for the relief of stress.

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General Psychiatry — Some Personal Reflections

**Dennis J. Kussin, M.D., F.R.C.P.*

"Bad chemicals and bad ideas were in Yin and Yang of madness. Yin and Yang were the Chinese symbols of Harmony".

*— from Breakfast of Champions
by Kurt Vonnegut, Jr.*

The editors have asked me to contribute an article on general psychiatry with some thoughts on the role of psychiatry in medicine. They felt that it would be helpful for medical students who are faced with the myriad career choices medicine offers to hear what a general psychiatrist does.

As I sit down to write I realize with somewhat of a sinking feeling that I have no tables of data to interpret and that an extensive review of the literature will be of no help. Nonetheless, since I call myself a general psychiatrist and am currently the Director of Postgraduate Training for the University of Toronto's Department of Psychiatry whose goal is to train general psychiatrists I will plow ahead, with the qualifier that these are "personal reflections."

To begin with, the term, general psychiatrist is problematic in itself. "general" or "generalist" has acquired a somewhat pejorative sense in medicine and I am sure is one of the reasons that general practitioners are becoming family practitioners, and "General" as an adjective to describe internists or surgeons never seems to be worn proudly. The term suggests we are talking about a special kind of psychiatrist, another subspecialty in a sense. In my view, the psychiatric generalist is synonymous with what all psychiatrists should be and therefore we should probably just use the term psychiatrists. Those psychiatrists (that is generalists) who choose to subspecialize may be and are referred to by their area of subspecialization i.e. researcher, psychoanalyst, child psychiatrist, etc. However, for the purposes of this paper I will continue to refer to general psychiatrists as those psychiatrists who do not devote a major portion of their time to any particular area of subspecialization in the field.

At a recent non-psychiatric social gathering, after, as usual, trying to defend my profession from the accusations of (a) being the new opiate of the people, drugging into submission those who should be expressing their anguish in social action, (b) labelling the truly sane, insane and (c) indiscriminately passing electric currents through the brains of those arbitrarily labelled socially deviant, I was asked "what kind of psychiatrist are you, a Freudian or a Jungian?" To my reply, a somewhat self effacing "I'm fairly eclectic", the response was a rather disappointed "Oh . . ."

Eclecticism, with some qualifications, is what I believe to be the basic approach required for the general psychiatrist. Hin-

sie and Campbell's Psychiatric Dictionary defined eclecticism as: "In Psychiatry, the selection of compatible features from diverse (and often superficially incompatible) system of metapsychology in an attempt to combine whatever is valid in any theory or doctrine into an integrated, harmonious whole". I would qualify this definition by adding biology to the mix and underlining that the "harmonious whole" is never entirely achieved. Modern psychiatry has always struggled with the mind-body problem. Psychological and biological theories of etiology or treatment modalities have often competed for the understanding of and treatment approaches to mental illness. General medicine until recently has been able to avoid this dilemma partly because its biological foundations are firmer than that of psychiatry and partly because it tended to ignore the psychological or "mind" contributions to medical illness. The task of the general psychiatry is to work at the interface between psyche and soma with a holistic attitude that does not require a strict adherence to either biological or psychological psychiatry.

In attempting to define what an eclectic approach is, it might be useful to state what it is not. A common misconception is that it is diletantism. The eclectic is seen as a kind of "jack of all trades" who dabbles in various modalities but masters none. Another misconception is that of a rather unsophisticated biological approach — "the pill pusher". At the opposite pole is eclecticism as a kind of motherhood issue. To quote Paul Meehl¹ in his conceptual article on schizophrenia "everyone readily ascends to such vague dicta as heredity and environment interact, but it seems that clinicians do not fully believe these principles in the concrete sense because they show signs of thinking that if a genetic basis were found for schizophrenia, the psychodynamics of the disorder . . . would somehow be negated or at least greatly demoted in importance." Rather than defining eclecticism by what it is not let me try to explore what it is.

The first principle is the understanding of and ability to use models rather than the adherence to a particular model or belief system. This is not as easy as it may appear on the surface. We are all more comfortable with certainty, with a comprehensive theory that explains all the variables. In many

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ways it is much easier to think of depression as a disorder caused by a deficiency of catecholamines in the intersynaptic space in a particular area of the brain. Then the therapeutic task becomes clear; find the antidepressant that will reverse the biochemical abnormality. Similarly, if one conceptualizes depression as a vulnerability caused by the earlier real or imagined loss of an ambivalently loved person, the therapeutic task also becomes clear. Make conscious the feelings about that earlier loss and allow the person to relive a more stable and caring relationship with a therapist which hopefully will heal the psychological wound. To adhere to a single theory is seductive. The eclectic psychiatric generalist must be comfortable conceptualizing depression as being best understood in any given case by using either of these two models and most likely both. He must be open enough to entertain other models that might offer useful tools for treatment or understanding and he must have the knowledge and skills to use the various models effectively. There are certain mental steps required in using this approach which are not always conscious. First, one must have an awareness that one is using a model. Then one must have the information and skills that a particular model offers and the ability to switch or change models at any given point in time. One must be able to superimpose the model like a transparency over the observable data (the patient) and assess its usefulness. A given model may be useful if it aids understanding, helps with prognosis, is heuristically useful in generating researchable hypotheses, or provides treatment options. If it is of no help in any of these areas I tend to discard it. A given model or frame of reference in psychiatry might be differentially useful in looking at various aspects of a psychiatric illness. A psychoanalytic model may be quite useful in helping to understand for example the etiology of phobia. However, a behavioural learning theory model may be more useful in understanding why the phobic symptoms persist.

All of this presupposes a holistic view of man although each model available to us only describes a part. The eclectic clinician does not have the certainty of the blind man convinced that the elephant is a tail, a foot or a trunk. He has to live with the dilemma of knowing that the elephant is all of these things and more. As a clinician, the eclectic psychiatrist is never at one time able to integrate all of the different ways his patient's psychic pain can be understood. It is therefore not that the general psychiatrist has a kind of super model allowing him to integrate all the various approaches but more that he is comfortable with the particular *attitude* of holism and an integrative approach.

Perhaps these musings have left those of you less familiar with the field asking "Yes, but what does the general psychiatrist do?". In my view, the well prepared general psychiatrist is able to comfortably see, assess and treat a wide variety of psychiatric problems. He also, in any given patient, is able to bring to bear a wide variety of treatment modalities which he may use in combination or differentially over time. Therefore one finds the general psychiatrist comfortably treating schizophrenia with perhaps a combination of psychopharmacological, social and supportive psychotherapeutic approaches as well as treating other disorders with a long term "relationship" psychotherapy of some kind. He also, I think, is best suited for the rapidly expanding field of consultation-liaison psychiatry.

I find it helpful to look at my patients using a few levels of abstraction that seem clinically useful to me. We can view ourselves as having a biological substrate (neurochemistry, neuroanatomy, etc.), and intrapsychic world with an unconscious mental life (unconscious feelings and memories plus unconscious or semiconscious cognitive "sets" or characteristic ways of perceiving or thinking about our world), a behavioural repertoire of characteristic ways of inter-relating with our fellows, and a characteristic physiological response system. All of these systems are semi-autonomous and inter-related. In a previous presentation on some of the psychological theories of migraine headache I suggested that these patients have a possible cerebral biochemical abnormality, a potential intra-psychic conflict over anger, a behavioural repertoire deficient in constructive ways of discharging the anger (poor assertive skills) and a disordered vascular response system to emotion. In any given patient the relative mix of these factors will be different. One can intervene at the neurochemical level with drugs, at the intra-psychic level with psychotherapy, at the behavioural level with various behavioural techniques (e.g. assertive training) and at the vascular level with temperature biofeedback, relaxation training, or drugs. The question is not which of these various approaches contains the truth but which provides the most useful model for the clinical purpose in a given patient. I do not use this example to defend the psychological theories of migraine which would be the subject of another paper but more as an example of a holistic approach.

The following is a more direct clinical example which will also serve to lead me to a brief discussion of the role of psychiatry in medicine. In a different professional life when I worked as consultation-liaison psychiatrist, I was called to the cardiac surgery ward to see a patient. The consult read "patient is psychotic — please transfer immediately." The patient was a fifty-seven year old woman who was admitted for investigations of and possible surgery for a long standing valvular heart disease. She was relatively healthy but her cardiac function had been slowly deteriorating. She, according to the nursing notes, seemed slightly anxious but otherwise pleasant and lucid on her admission. She was to have a cardiac catheterization and angiography the following day. When she was wheeled into the angiography room she told the nurse and physician that she knew this was her tomb and that she had died the night before. This, needless to say, precipitated a rather urgent consultation and cancellation of the procedure. When I examined the patient she indeed was delusional, slightly euphoric, perplexed, but with no clear signs that would suggest an organic cause for her psychosis. She was not acting bizarrely or posing any major problem for the nursing staff but there was clearly a strong wish for the treating team to have her transferred immediately. There were, as usual, no psychiatric beds available and so I began to treat the patient with anti-psychotic medication and returned to see her daily. After two days her psychosis completely cleared and she was able to relate well to me and give me a more detailed history. It was apparent that she had been depressed prior to entering the hospital. She had given away her car, had isolated herself from her friends and had for the first time in her life written a will. She had not been sleeping or eating well for a month. She had felt that she was not likely to survive much longer, partly based on a lack of information about her heart disease.

There were also a number of personal issues including her impending retirement from work and a long standing unhappy relationship which she was able to talk about for the first time. I also met with the nursing team because the pressure for discharge or transfer was becoming even more intense despite the patient's improvement. There I learned, after some probing, that the previous patient had undergone cardiac arrest during the same procedure. There were major unresolved feelings among the nurses and doctors about this, which had never been discussed. Therefore, a number of different factors inter-related to produce the final common pathway of a psychotic episode in this particular patient. Her depressed mood, her possible vulnerability secondary to poor brain perfusion, and the staff's unresolved anxiety may have all interacted in some way. One could intervene at the biological level with medication, at the intra-psychic level with brief psychotherapy and at the level of her relationship with the nursing staff by meeting with the treating team. This required the psychiatrist to have some knowledge regarding the differentiation of functional from organic illness, some comfort in and knowledge of the use of medication and some knowledge of psychological theories of depression and group dynamics. For me, attempting to work at all these levels and trying to tease apart their relative contributions to the clinical syndrome I am seeing, makes my work fun and intellectually stimulating.

This leads me then to a few comments on the role or roles of psychiatry in medicine. Clearly its primary role is as the branch of medicine that takes responsibility for the investigation and treatment of those patients who present with symptoms of psychological pain and/or dysfunction. This should, and does encompass the broad range of disruptions in psychological life, from the severe forms found in the functional or organic psychosis to the so called "problems in living" often treated by psychotherapy. Recently, psychiatrists have as well contributed to the increasing recognition of the role that psychological factors may play in the etiology of, or response to, medical illness. This is underscored by the rapidly expanding field of consultation-liaison psychiatry. I believe the general psychiatrist has a unique role to play in sensitizing the medical profession to the importance of seeing all illness as a complex interaction of biological, psychological and social factors. This is not to say that the psychiatrist is the only medical practitioner that can do this but his training in both biological medicine and psychology makes him best equipped for the task.

All of this has a number of implications for the training of psychiatrists. Imparting the rapidly expanding body of information in biological psychiatry is fairly straightforward. Training psychiatrists to be good psychotherapists is more complex but there are a number of mechanisms currently used, including didactic information, clinical supervision and for some, a personal experience in therapy. However, I think the real challenge for psychiatric educators and for that matter for all medical educators is to impart the tools that will allow our future physicians to become holistic in their thinking, and generalists in the best sense.

There is an increasing body of knowledge that will provide the information base for an integrative approach. There is not much question that brain function influences feelings and

behaviour. However, there is now increasing evidence that experience also may influence brain chemistry and brain function. There is evidence that intersynaptic neurochemistry is influenced by the frequency of neuronal stimulation, that rats raised in different environments will have different and predictable neuroanatomical and neurochemical changes, and that children's growth hormone levels can be influenced by the degree of emotional stimulation or neglect they experience.² The relatively recent understanding of the differential functioning of the right and left hemispheres of the brain may even be the beginning of a neurological understanding of the unconscious.³

I think there are a number of advantages to this approach. First I believe it solves the often written about identity crisis of psychiatrists. In my opinion, the unique contribution of medically trained psychiatrists, with one foot firmly entrenched in biological medicine and the other in psychology, is the ability to work most effectively at the interface between body and mind and this clearly differentiates them from other disciplines trained in psychological methods of treatment alone. Secondly, my clinical impression is that one can treat a greater number of patients, and an individual patient more effectively, with combined approach. These assumptions will need to be tested in outcome studies but there is certainly preliminary work suggesting that at least in the areas of depression and schizophrenia a combined approach of medication and some form of psychotherapy is more effective than either approach alone.

Finally, I would say that the approach is both clinically rewarding and intellectually stimulating. I hope this has given you a somewhat clearer idea of how the general psychiatrist thinks and what he or she does.

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Gender Dysphoria; Insight into Transsexualism

Bruce Pipher 8T6

The Toronto Gender Identity Clinic at the Clarke Institute of Psychiatry has been in operation since the summer of 1968. The following paper is written to outline a brief history of transsexualism, the terminology used in the diagnosis of gender disorders and the management of patients seen by the Toronto Clinic. Finally, a review of the diagnoses given to patients during 1982 and 1983 is presented.

The study of gender identity in psychiatry is a relatively new field dating back only a few decades. Many theories have been formulated in an attempt to understand why a person may become gender confused but as yet, no model has proven satisfactory. It may be easy for the reader to simply label all transsexuals as "weird" or "freaks". However, it is hoped that through this paper one might conclude that patients with gender dysphoria are psychologically disturbed individuals who deserve proper psychiatric assessment and follow-up. Transsexualism is a rare disorder, the study of which may help us to better understand how the "normal" individual learns to identify his or her own maleness or femaleness.

A Brief History of Transsexualism

In modern psychiatry, transsexualism was first described by Cauldwell (1949) as "psychopathia transsexualis." The term "transsexualism" was first used by Benjamin (1953). Despite the fact that it was not formally recognized in medicine until the mid-1900's, transsexual as well as transvestitic behaviour is not a modern phenomenon. In fact, in many cultures throughout history both males and females have cross-dressed and assumed the role of the opposite gender. The "Skythian Illness" as described by Herodotus was a role some males of the Skythian culture would assume. These men would wear women's clothing and work alongside women in their household duties. Sardanapalus, the final ruler of the Assyrian Empire of Ninevah, as well as the Roman emperors, Caligula and Heliogabalus, were known to appear cross-dressed. Throughout European history transvestism and transsexualism have been documented. Well known accounts include those of Chevalier d'Eon and Mlle. Jenny Savalette de Lange. Amongst primitive tribes of North America, Africa and Asia, numerous cases of males and females living as the opposite sex have been confirmed. "Berdache" as discussed by Seward (1946) was a behaviour exhibited by some male members of the Plains Indians. Despite assuming some typically male occupations such as hunting, these males would also engage in mostly female activities and perhaps marry men. Cross-gender behaviour was seen in some females of the Blackfoot Indian tribe who took part in male activities and were sexually aggressive. Another example has been observed

in the Mohave Indians. In this tribe, boys who would later become Shamans were permitted to assume permanent cross-gender roles (Devereux, 1937). A final example may be taken from Crawley (1960) who described a group of men of the Onondaga people of the former Southwest German Africa, who were permitted to live and dress as females. Thus, it can be seen that transsexual and transvestitic behaviour is not a recent phenomenon.

Terminology

The terminology used for patients with gender disorders has not been highly standardized. Authors of various papers have used a number of different classifications and it may be difficult for the reader to sort out the many terms used. In a discussion of the terminology of gender disorders for those unfamiliar with the topic, it is best to first outline the definitions used in the DSM III. Herein, transsexualism is described as "a persistent sense of discomfort and inappropriateness about one's anatomic sex and a persistent wish to be rid of one's genitals and to live as a member of the other sex." (261-262). Transsexualism is then further divided into 3 subtypes;

1. Asexual: These individuals exhibit no strong sexual feelings and may also derive little pleasure from their genitals.
2. Homosexual: Nearly all of the females and many of the males are considered to be in this group. They are erotically attracted to members of their own biological sex. Many of these people deny that such activity is homosexual because they believe they really are members of the opposite sex.
3. Heterosexual: This group is made up almost entirely of males who are initially sexually aroused by females. As the disorder progresses and sexual reassignment has occurred, these individuals may desire sexual relations with men.

Female transsexuals are almost exclusively seen as second subtype, homosexual, and are therefore seen as a rather homogeneous group. Male transsexuals however may be from any one of the three subtypes and thus constitute a very heterogeneous group. To avoid confusion, the diagnosis first

given a person before surgery remains even after sex reassignment. Thus if a biological male transsexual, who initially reports being aroused by males, undergoes surgical sex reassignment, the patient will still be considered a homosexual transsexual.

The Toronto Clinic takes the viewpoint that there are two main groups of transsexuals seen. The first group, labelled "primary transsexual" exhibit cross-gender behaviour from a very early age. These people are often very asexual, and in cases reviewed by the author, it was noted that they often became withdrawn during adolescence. The "secondary transsexual" is the second, more common group seen in the Clinic. These patients have not always indicate a desire to live as the opposite gender and at one time were considered to be transvestites or homosexuals. Over time these individuals no longer feel comfortable with their biological sex and are seen to consolidate into a secondary transsexual framework. The idea that an individual may change his/her gender identity in later life is a new concept which would appear to disagree with the hypothesis that gender identity is firmly fixed by the age of three. (Money, 1969).

Transvestism is defined in the DSM III as "recurrent and persistent cross-dressing by a heterosexual male that during at least the initial phase of the illness is for the purpose of sexual excitement." The definition indicates that this disorder rarely if ever occurs in the female. The DSM III further states that if the transvestite later desires to live permanently as a woman then the diagnosis of transsexualism should be given.

A third group of individuals with which the Toronto Clinic comes into contact is that of the effeminate male or masculine female homosexuals. This group is seen also at times to indicate a desire to live as the opposite gender and over time may come to manifest behaviour which is best described as transsexual. Thus some homosexuals may be given a diagnosis of transsexualism.

A diagnosis of atypical gender disorder is given to a patient who does not fall under any of the diagnostic gender disorders previously described.

A final term, not used in the DSM III, should also be defined. "Gender Dysphoria" is used to refer to all people who feel uncomfortable with their biological sex and wish for surgical reassignment. These desires may be weak and/or periodic. This term therefore includes true transsexuals, but may include individuals considered to be transvestites, effeminate male/or masculine female homosexuals, who at one time in their lives desire surgical sex reassignment.

There are many theories as to why an individual may be gender dysphoric ranging from a purely biological approach to an entirely psychodynamic concept. Many models are quite complex and would require great detail to present adequately, and thus go beyond the scope of this paper. Those interested in information regarding these theories are referred to Hoenig (1982).

The Toronto Clinic

The first Gender Identity Clinic designed to study the transsexual phenomenon was established in 1966 at the

Johns Hopkins Hospital under Dr. Harry Benjamin with support from Dr. John Money. Evaluation of transsexuals also occurred in Los Angeles about this time by Dr. Robert Stoller who was also to become a leading authority on transsexualism. The first clinic to open in Canada was in the Clarke Institute of Psychiatry in Toronto. It began in the summer of 1968 as a pilot project to study gender dysphoria, sponsored by the University of Toronto. It was not until 1975 that the Gender Identity Clinic was established full time. As of May, 1984, 814 patients (613 males, 183 females) have been referred to the Clinic from across Canada and 121 patients (63 male, 58 female) have been approved to undergo surgical sex reassignment. Thus the ratio of those referred to the Clinic to the number of patients recommended for surgery is about 7:1.

The Toronto Clinic conducts the assessment of a patient over a period of one week. Upon referral from a physician the patient is sent a questionnaire and asked to submit a life history. The current waiting list for referrals is 6 months.

An initial interview by a team psychiatrist is done in order to determine the type of gender dysphoria exhibited by the patient. A further psychiatric interview is performed later in the week by a consulting physician to confirm details of the patient's history. Appointments are made with an internist and endocrinologist in order to determine if any biological abnormalities or medical problems are present in the patient. Along with psychological testing, a final consultation is made

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with the staff coordinator who obtains further information about the patient's family life. The coordinator also acts as a liaison who ensures that the patient understands any information presented to him or her. After 6-8 weeks a patient is invited to return for a conference of his/her case at which time the clinic's recommendations are made known.

Management of the Transsexual Patient.

If the patient is diagnosed as transsexual and has been living as the opposite gender for at least one year, hormone therapy may be recommended.

For the male-to-female transsexual 250 micrograms of d-norgestrel with 50 micrograms of ethinyl estradiol will be first prescribed. The dosage of ethinyl estradiol will be reduced to 0.05 micrograms t.i.d. after surgical sex reassignment. Only moderate somatic changes will be noted in the biological male after commencing estrogen therapy. The growth of facial and body hair will somewhat decrease and the hairline on the scalp will no longer recede. Body fat will redistribute around the hips, shoulders and neck. Gynecomastia of mild to moderate proportions will also be expected and the patient's libido will be decreased. It is important to note that all signs of feminization will disappear within 6 months of cessation of hormone therapy. The side effects of estrogens, such as thrombo-embolic disorders, are well known, so that prescribing female hormones to older overweight males and to those with diabetes mellitus is done very cautiously and is often contraindicated.

Testosterone therapy for the female-to-male transsexual is given intramuscularly as testosterone enanthate 200mg biweekly. Results from androgen therapy are seen to be more dramatic in the biological female than are those from estrogen therapy in the biological male. An increase in body facial hair will occur in the male pattern. The neck and shoulder girdle will thicken and over a period of a few weeks the voice will deepen to the male range. The clitoris will enlarge to 2-6 cm during sexual arousal however it will still be incapable of vaginal penetration. Sexual drive will also increase. The patient will no longer menstruate as the ovarian function will be inhibited by the androgens. Again all signs of masculinization will disappear if hormone therapy is stopped except for the voice which will remain in the male range. Side effects of androgen therapy include acne vulgaris and water retention. A noticeable increase in body weight may be noted and new bone growth has been observed in some individuals. The incidence of hepatic carcinoma and hepatitis has been observed to rise marginally in patients on androgen therapy.

When the gender patient has fulfilled the requirements set by the clinic and is emotionally stable, surgical sex reassignment may then be recommended. The criteria set by the clinic are as follows:

1. The patient is diagnosed as transsexual.
2. The patient has lived for a minimum period of two years in society in the chosen gender and has been on hormone therapy for at least one year.

3. The patient is gainfully employed and self-supporting.
4. The patient does not suffer from any psychiatric disorder which would prevent him (or her) from comprehending the surgical procedure and its irreversibility. eg. he is not mentally retarded, does not suffer from a chronic psychosis etc.
5. The patient is physically healthy.
6. The patient is not married (because of possible legal complications.)¹⁵

The surgical procedure for the male-to-female transsexual includes bilateral orchidectomy. The scrotal skin is later used to form the labia majora. The skin of the penis is dissected from the body and is used to line the neo-vagina after penectomy. Remnants of the corpus spongiosum are used to form the clitoris. Closure of the neovagina will occur if the cavity is not adequately dilated following surgery. Patency is accomplished using stents which remain in the vagina except during coitus.

The female-to-male transsexual surgical procedure begins with the removal of breast tissue from both breasts followed by nipple transplantation to resemble the male chest. Scarring may be minimized in this procedure by using a periareolar incision and removing breast tissue from this location. This technique can only be used however, if the breasts are small. Larger breasts require the surgeon to make a semicircular cut below the breast and run a T incision up to the areola of the nipple. A pan-hysterectomy and bilateral oophorectomy is an elective procedure which may follow breast removal. This intervention is often done at the patient's request or may be advised because of familial history of carcinoma of the organs involved.

Phalloplasty, or the creation of a penis, is not normally performed on the female-to-male transsexual. During 1981-1982, four phalloplasties were done in a study to determine if the procedure was satisfactory. A neophallus is constructed by first creating "a bipediced, midline, lower abdominal tubal flap of skin."¹⁵ The superior end of the neophallus is cut away from the abdominal wall when a sufficient blood supply has

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formed into a phallic flap. A removeable prosthesis is used for erection of the neophallus and permits vaginal penetration.

The surgery may also be requested by the patient. So far at the Toronto Clinic no female-to-male transsexual has expressed a wish for further surgical intervention. Male-to-female transsexuals often demand breast augmentation surgery and laryngeal shave to remove a prominent thyroid cartilage. The vocal cords may be shortened to raise the pitch of the male voice. Electrolysis is a costly and time consuming procedure which all male-to-female transsexuals require to permanently remove facial and body hair. Further cosmetic procedures include rhinoplasty and face lifts which may give the patient a more feminine appearance.

Patients Seen at the Clinic during 1982/1983

The sex ratio amongst patients assessed at Toronto Clinic has change over the years. During the initial pilot project there were approximately 5 males for every female interviewed. Estimates of the proportion of males to females requesting sexual reassignment in other North American clinics were as high as 8:1 (Benjamin 1966). During the writing of this paper, the author reviewed the files of all patients assessed by the Clinic during 1982 and 1983 in order to determine the diagnosis of each patient. A total of 92 cases were documented, 30 females and 62 males for a ratio of 1:2. A study of the incidence of transsexualism written by Walinder (1967) estimated initially that the incidence of transsexualism was 1 in 37,000 males and 1 in 103,000 females. Upon further analysis Walinder determined that the male to female incidence was closer to being equal. Of those approved for surgery by the Toronto Clinic and thus true transsexuals, the ratio as described earlier in the paper is one male for every female. These figures appear to agree with Walinder's findings.

From the review of the files, patients were categorized in one of a number of gender dysphoric classifications. These included primary and secondary transsexualism, ego-dystonic homosexuality, transvestism and atypical gender dysphoria. A few patients did not fall under these diagnostic categories and instead were seen as having a personality disorder or an adolescent adjustment disorder. A summary of the number of patients found to be in various diagnostic categories can be found in Tables I and II.

From Table I it can be seen that in the male population the most common diagnosis was transvestism²⁴, followed by 17 atypical gender disorders. Of the 11 male patients diagnosed as transsexuals only 1 was believed to be a primary transsexual, the other 10 were considered to be secondary. In the other categories listed, 7 patients were believed to be ego-dystonic homosexuals, 2 were borderline personalities and 1 had an adolescent adjustment disorder.

The female patients had fewer diagnostic categories which confirms that they constitute a more homogeneous group. Amongst the females (see Table II), 15 were primary transsexuals, 3 were secondary. Six patients were labelled ego-dystonic homosexuals, and 6 patients were considered to have atypical gender disorders.

TABLE I

Male Patients Assessed during 1982 and 1983.

Diagnosis	Number of Patients
Primary Transsexualism	1
Secondary Transsexualism	10
Transvestism	24
Atypical Gender Disorder	17
Ego-dystonic Homosexuality	7
Borderline Personality Disorder	2
Adolescent Adjustment disorder	1

TABLE II

Female Patients Assessed During 1982 and 1983

Diagnosis	Number of Patients
Primary Transsexualism	15
Secondary Transsexualism	3
Ego-dystonic Homosexuality	6
Atypical Gender Disorder	6

The high number of patients, both male and female, who were diagnosed as having atypical gender disorders indicate how difficult it is to place a patient into a specific diagnostic category. This difficulty arises because of the heterogeneity of all patients assessed at the Clinic.



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Conclusion

Transsexualism is a rare phenomenon which has been seen in both males and females throughout history. Although estimates of the ratio of male to female transsexuals vary from study to study it appears that the ratio is much smaller than originally assumed. The terminology used for patients can become quite complex and it is best to follow the classifications outlined by the DSM III. Many individuals assessed at the Clinic can be quite manipulative and demanding, and thus strict guidelines have been set up in order to ensure that all patients are treated fairly and without bias. Why an individual becomes gender dysphoric is still unknown. Although both biological and psychodynamic models have been formulated to explain transsexualism, experts in the field still do not agree on any one theory. It is hoped that with further study, the causes of transsexualism will be revealed so that individuals complaining of gender dysphoria may be better understood and more competently helped with their problems.

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A Consideration of Psychosocial Aspects in the Treatment of the Burned Child

Heather Volkert 8T6

A burn injury is a shocking punctuation in the life of a child and his family. A burn is certainly an event fraught with emotions, and has immense psychological implications for all of those involved in the original accident and in the care of the child. When the child is rushed into the hospital through the Emergency Department his lifestyle is dramatically changed and his family is torn apart. Frequently this is the first time that the child has stayed away from home, and this can be very stressful for the child and the parents. The behavioural responses to this stress are often severe and unpredictable.

The following discussion will elucidate many of the sources of stress for the child, the family, and the hospital staff during the hospitalization period. An examination of these factors will hopefully reduce the stress for everyone during this period, and thus improve the quality of care for the child and the family. The Hospital for Sick Children provides the example of a paediatric burn unit in which every attempt is made to recognize and deal with emerging sources of stress on ward.

The Child

The child is the person towards whom all treatment is ultimately directed. He brings with him to hospital his own beliefs about what has happened to him, why this has happened, and what the future holds for him. The child's beliefs will depend on his age, sex, family life, and previous exposure to doctors and hospitals. The child will be subjected to many well recognized sources of stress throughout his recovery. These include ⁴:

- prolonged hospitalization
- isolation
- immobilization
- repeated surgery
- extreme pain
- disfigurement
- total dependence on people who are strangers
- often loss of family or friends in the original accident

The child's reaction to the hospital situation will depend on his developmental stage at the time of the burn. Knudson-Cooper⁸ describes four critical developmental periods in the child's life:

1. Infancy — where the child's attachment to his mother is seen as central to the development of basic trust
2. Early Childhood — where the child begins to define himself as a separate person with an individual identity
3. Middle Childhood — where the child is concerned mainly with developing a mastery over his physical and social environment

4. Adolescence —

where the child begins to develop his adult sexual and social identity and begins the separation from the family of procreation in preparation for entry into the adult world

The different developmental stages endow the child with different social skills allowing him to deal with the stress of hospitalization. Infants are least able to understand their circumstances, but do certainly experience an awareness of pain and isolation from their mothers. The infant's reaction to the pain of treatment involves withdrawal, manifested by sad facial expressions, eating and sleeping disturbances, and failure to respond favourably to others. Despite this, young children heal very quickly, and usually adjust relatively well to their situation.

In early childhood, the individual has some mastery over his environment (such as bowel and bladder control, speech etc.) and he is better able to calm himself. The young child's reaction to the stress of hospitalization includes regression to the dependency of infancy, with loss of motor and sphincter control, refusal to eat, clinging, crying, and aggressive behaviour. Much of the child's independence has been removed and he feels helpless to determine what happens to him.

In middle childhood, more emphasis is placed on relating to peers on the ward and at school. These children are better able to communicate their feelings by speech, play, or drawing. Their regression includes episodes of hyperactivity or extreme passivity, as well as sharing many of the reactions of younger children. Pre-adolescents at the onset of puberty experience mood changes including anxiety, depression, extreme shyness, aggression and temper outbursts.

Personality restructuring goes on in the adolescent period, with the emergence of the secondary sex characteristics. At this stage, regression tends to oppose the normal developmental strides of cognition and social functioning⁵. Regression is manifested by anxiety, depression, aggression, manipulation, and refusal to cooperate. Nightmares are common in this and other age groups after any traumatic accident.

There are recognized crisis periods of maximal stress associated with the recovery from severe burn injuries⁵. These are:

1. immediately after admission when the seriousness of the injury is recognized
2. during the period of prolonged recovery, involving immobilization and fear of disability
3. the return home
4. meeting friends and schoolmates
5. approaching adolescence with disfigurement

Thus, the psychological aspects of a burn may be seen to manifest themselves through three phases¹⁰

1. acute reaction to the burn
2. reaction to long-term burn treatment
3. emotional adjustment to post-burn conditions

The acute reaction takes place in the period immediately after the burn injury. This is often the least stressful period for the child, because he may be in a state of physical and mental shock, and if the burns are third degree there is no pain associated with them. At this point, unusual behaviour on the part of the child may be due to organic causes. Pyrexia, hypovolemia, and sepsis may lead to restlessness, hallucinations, delirium, or a decreased level of consciousness⁶. The primary stress for the child at this time is emotional, involving isolation from family, strange surroundings and people, and upsetting behaviour exhibited by distraught parents. The child's sense of security is shattered. The child might be afraid that he is going to die, and it is very likely that he blames himself for the accident. Children often believe that their pain is a punishment for real or imagined misdeeds. Children quickly form a triple link between pain, punishment, and those who punish, which creates a barrier between the child and the hospital staff. This process may take days to develop, but in one study was found to occur in all of the severe burn cases studied⁹. The patient is cooperative at first, then there is a rapidly progressive decline in the level of cooperation. Each patient struggles with his own personal problems, involving not only the injury itself but the patient's interpretation of it. Inadequate communication between the doctor and the child can lead to the child believing that the doctor either blames him for the accident, does not care about him, or thinks that the burns are too awful to talk about. Conversation between the doctor and the parents is obviously important. It is equally important that the child be spoken with in a language that he can understand about what is going to happen to him in the hospital and after the return home.

In the case of the severely burned child the acute period is a time of intense struggle by the staff to keep the child alive. Staff and family hope can be a major factor in the survival of the child. Withdrawal in these children can take on one of two forms; conversation withdrawal or depression withdrawal¹⁴. Conversation withdrawal is adaptive, and interference in this

withdrawal is resisted by the child. Depression withdrawal occurs when the child gives up fighting for himself. In depression withdrawal interference by staff is not resisted. These children do not protest, but simply do not respond.

The reaction to the long-term burn therapy begins when the child and his family realized that the child is not going to die. The emphasis must now be placed on getting family life back to normal, and less time is now spent in the hospital with the burned child. The major stress for the child during this period is the child's continued loss of control over his environment. To cope with this stress the child may react with denial, withdrawal or regression. He may interpret the prolonged separation from his parents as an accusation by them of his guilt in causing the accident⁴.

During the early recovery period the child and his family may become very upset with the gradual realization that the burn scars are permanent, and that plastic surgery offers significantly less than a return to the pre-burn appearance of the child. To the untrained person the burns are often judged to look worse with every dressing change. Young children may not understand the grafting process, and feel that they are being tortured for their misbehaviour by doctors who take away what little good skin they have left, and leave them confined to bed for days.

When the burned child is treated, the principles followed contradict the child's normal response to pain. Proper treatment involves vigorous interjection with the healing wound in order to obtain the best possible result. The wound is manipulated daily, and the child is understandably confused. The child may not believe that the treatment will help, and may even fear that the treatment will prolong the healing process. This increases the child's mistrust of the hospital staff.

The young child experiences a loneliness attributable to the loss of physical contact with his mother. "The burn makes holding a child impossible for the skin has been destroyed and the pleasure of its sensation has turned to pain"⁷. For the child at two years of age, the presence of a severe burn can significantly disrupt the primary bonds between mother and child, especially those involving physical contact, clinging and following.

The treatment of burn wounds is a painful process, and it is frequently difficult to determine whether the child's response to painful procedures is due to physical pain, or due to anxiety about the procedure. Various programs have been designed which attempt to decrease the burden of pain and anxiety that the child bears. The methods suggested range from anaesthesia and analgesia to distraction techniques, hypnosis, and biofeedback. There are conflicting points of view in this matter. Some centres recommend the extensive use of analgesics, especially during dressing changes and other painful procedures. Anaesthesia is recommended for small children during vigorous debridement procedures. The drawbacks to this form of treatment include the potential harmful side effects of pain medications, the possibility of addiction, and the magnification of the child's loss of control over his situation.

The issue of primary importance here however, is the elucidation of the nature of the stress which is interpreted as

pain. Physical discomfort and frank pain can be due either to the injury itself or to the clinical nursing of the wound. In addition to this, a large part of the appreciation of pain is due to the patient's expectations and interpretation of the stimuli.

Anxiety and the expectation of pain can have a negative influence on the pain experience¹².

The following guidelines for basic therapeutic interventions in the care of the burned child have been designed with the goal of decreasing the child's apprehension and perception of pain¹³.

1. psychological preparation for the procedure
2. encouragement of consistent substitute holding relationships with staff and others
3. reinforcement of denial where appropriate
4. tolerance of regression
5. encouragement of adaptive fantasy
6. pharmacological relief of pain and anxiety
7. hypnotic distraction techniques

The usefulness of items three through seven has been questioned in other studies of burned children. It is felt by some⁷ that by involving the children actively in dressing changes it was possible to obtain much more predictability and controllability of their behaviour. Active involvement of the children also corresponded with decreased narcotic use on an as-required basis. Allowing the child to participate in dressing changes and praising him for his helpful actions build the child's self-esteem and is also good physical therapy. This theory is used as the basis of treatment for children at the Hospital for Sick Children, where children of all ages are encouraged to help in their wound care.

Although the child must be allowed some autonomy in his medical care, behaviour control is to be maintained at a reasonable level. Total rejection by the staff of the child's misbehaviour is interpreted by the child as confirmation of the child's guilt feelings. Too much permissiveness is also undesirable as it can interfere with the treatment and be interpreted as a lack of concern for the child. The child must be maintained in an environment where he perceives himself to be welcome and wanted as an individual, but he must also recognize his own commitment to the ward and to his own recovery.

The Family

When a child is burned it is a psychological trauma for the whole family. A thermal injury is a great stress for even the best-functioning family, and, for the family who has already been experiencing difficulty in coping, it is often the beginning of the end of the family unit. Thus it can be understood why it is often the single parent family or the family with many children and inadequate social support that is involved in this sort of tragedy¹. For this reason burns are also more likely to occur at times of family stress when normal routines are altered. When the family arrives in the Emergency Room, each member brings with him his own individual coping mechanisms, as well as the established family ways of dealing with stress. Often these established ways are inadequate and the resulting strange behaviour of the family is interpreted by the staff as inappropriate, leading to isolation of the family.

Parents are often in a state of emotional shock, and guilt is

a universal and natural emotion. This guilt is based on the exaggerated belief by the parents that they did not do everything possible to protect their child. This guilt may be augmented when the child enters the hospital and all responsibility for that child's care is taken from the parents and placed on the hospital staff. The parents must view their child through glass windows, and what they see is little more than a large bed with a tiny body upon it, and many beeping machines and hanging bottles connected to that tiny body through a myriad of wires and plastic tubes. This produces stressful feelings of failure and helplessness for the parents. In many cases more than one family member is involved, and whatever support system is established in the family is disrupted. If there was a major fire in the home, the family is displaced and many concerns are raised which are not directly related to the child. When parents try to cope with their other worries their guilt is increased because they think that their concern for the child is inadequate. In addition to their feelings of guilt, parents often respond with indecision and an inability to face the victim. Pre-existing problems are intensified^{2,3}. Anguish on the part of the mother is an attempt to identify with the child and share the burden of the child's physical suffering. In an attempt to identify with the child, a mother will often turn to another woman as a mother-figure, which can isolate the father and cause further stress in the family.

Grief is an overwhelming emotion which the parents must deal with. When the child's face is disfigured the parent's reactions involve a state of mourning for the lost image of the perfect child. The six stages of grief reaction (shock, denial, anger, depression, bargaining, and acceptance) are experienced by all those involved⁸, with individuals progressing at varying rates, and spending different lengths of time at different stages. If different family members progress at different rates, they may become frustrated with one another adding to the stress of the situation.

The acute period gradually becomes chronic and the whole family looks ahead to the rehabilitation and release of the child. Despite the relief that the parents experience when they know that their child will survive, there is often no relief to their emotional turmoil. The parents must cope with their many obligations to the whole family and the burned child ceases to be the sole focus of the family unit. Consistent visiting continues to be difficult, as many parents have to travel long distances, fit into rigid visiting schedules, find babysitters for siblings, and manage the financial strain of travel. The Hospital for Sick Children has a hostel for parents from outside of Toronto, and various support groups are available to assist in the minding of siblings in the family's local area. Despite these supports, visiting is still expensive and difficult for many parents to manage, and the frequency of family visits generally declines in the later period of therapy.

When the parents do visit the hospital, the burn ward may be seen as a very frightening and upsetting place. Parental visiting usually brings on episodes of crying by the child, which upsets the parents who don't understand that they're helping, and fear that their visiting may be harmful to their child's emotional well-being. Children often take out their hurt and anger by saying cruel things to parents and siblings. It is usual for the child to direct most of his anger toward his

siblings, as this is the usual pre-burn situation¹¹. The difficult behaviour of the burned child can be a discouragement to family visiting, but the importance of the visits must be stressed by the hospital staff.

Parents may have other reasons for believing that their visiting is of no benefit to their child. Until the parents are trained in dressing changes and care of their child, they feel quite helpless to administer any care to the child. The child's numerous bandages frighten the parents and suggest that he is fragile and shouldn't be handled. Parents should be encouraged to touch their child as much as possible, and actively play with him. Involving the parents by teaching them to care for their child is a good practice, as it educates them about the child's progress. It also allows time for the parents to develop the skills that they will require to look after their child following discharge, and increases the emotional support for the parents and the child.

It is essential that the hospital staff make a strong effort to keep communications open with the parents, and support them in their child-caring role. Although basic therapeutic decisions must be made by the staff, the parents should be consulted as much as possible, both to keep them informed and allow them to participate as much as possible in tailoring care to the individual child. If parents are prevented from making any decisions it is very stressful for them. They will resist decisions made for them, and this can lead to mistrust of the hospital staff.

This general feeling of helplessness and mistrust can act to separate members of the family from each other as well as from the hospital staff. Family members may struggle for control of the child's treatment and the child's attention. Grandparents may take sides against their son/daughter-in-law, or against their own child. This activity can undermine everyone's confidence in the standard of care that the child is receiving, and add more tension to an already stressful situation. This situation demands remedial intervention by someone, possibly by a clergy member, social worker, or member of the nursing staff. The goal here is not to solve all of the family's problems, but to decrease the effect of these problems on the child, and minimize interference with the family support which the child requires. This may be seen as the beginning of a long-term program of care for the family unit, involving the social worker, nurse, and psychiatrist if indicated.

The Staff

The decision by a medical care professional to work on a burn team is not one to be made lightly. It involves a deep commitment, and is certainly not a "nine-to-five" job. Working with burned children means giving and taking, hurting and being hurt. This work involves major victories and major defeats and in-between many months of rigorous, emotionally and physically exhausting work. A certain degree of emotional involvement with the children is necessary, but frequently the psychiatrist and other closely involved team members find the involvement painful.

The concept of a burn care team is central to the effective care of the child. The team usually includes members from many health care disciplines. This includes the surgeons residents, infectious disease specialist, the nursing staff, a social

worker, a psychiatrist, a physical therapist, an occupational therapist, a recreational therapist, and a nutritionist. Each member of the team has a unique role to play in caring for the child, as well as a commitment to work with the team. Regular team meetings are held (weekly at the Hospital for Sick Children) to discuss the patients' program, and any complications which may be arising. This enables the team to speak as a unit, as well as allowing an opportunity for the members to express their doubts about their own working relationships with the child, and receive support from the other team members.

The nursing staff involved in the medical care of the burned child are required to perform many procedures which are painful for the child, and unpleasant even when all possible physical and psychological supports are provided. This can lead to stress from feelings of guilt by the staff for inflicting pain on an already unhappy child. The burn team functions as a unit to support the staff through these emotions and it is important for the staff to have a positive attitude and accept the need to cause pain during treatment¹⁵.

The method of nursing care used at the Hospital for Sick Children is one which has received favourable reviews in recent literature. This method involves the selection of one special nurse for each severely burned child. This nurse is the one person who will be primarily responsible for all of the child's nursing care when he/she is on the ward. Usually within the first few days of the child's admission to the burn ward a nurse will volunteer for this responsibility. This nurse will accompany the child through the majority of the child's treatment procedures, and will form a special emotional bond with that child. The consistent presence of an adult is supportive and can help in explaining procedures to the child and providing effective therapeutic distraction. This begins in the acute period and progresses to the stage when the child is gradually reoriented to life outside the hospital. By choosing a special nurse the total number of care-givers is reduced, thus decreasing the number of people that the child is forced to depend upon. This acts to increase the uniformity and predictability of procedures, and decrease the stress for the child. The child is much more willing to comply with treatment if this behaviour is encouraged by someone who is special to the child. This nurse is scheduled sufficient time to play with the child, and encourage the parents in their role of caring for the burned child.

As it was mentioned in the discussion of the parents' situation, it is the role of the hospital staff to keep communication open between all those involved in the child's care. The hospital staff must avoid phraseology that can be interpreted as accusations of neglect on the part of the parents. It is important that the staff keep an open mind to the parents' behaviour and attitudes. It is too easy for the staff to label the parents as "good" or "bad", and proceed to relate to the parents on the basis of this judgement. The staff members may feel resentment toward the parents whom they see as being responsible for the child's condition, and often feel that the parents are not capable of providing sufficient care for the child after discharge from hospital. A realistic examination of the parents' strengths and weaknesses in caring for the child is required before the child leaves the hospital, and this should be based on objective observations of the family situation, and

the child's interaction with his parents. It is the ultimate goal of hospitalization to return the child to the home, with as good a chance as possible to lead a normal, happy life.

Rehabilitation

The rehabilitation process begins almost immediately upon the child's admission to hospital. The child's burns are treated in such a way as to promote healing and prevent disability. Disability refers to much more than a physical inability to perform a task. It is as much a mental state, thus the child's interpretation of his body is worthy of as much consideration as the state of the child's corporeal self.

The burns themselves require prolonged treatment to minimize disfigurement. This involves the use of special garments and splints for years after the initial event. Surgical release of scar contractures which limit joint mobility may be required long after the child has returned home to his family and schoolmates. Plastic surgery is an ongoing process with the goal of optimal functional and cosmetic results. Unfortunately the optimal result of the treatment of a severely burned child is not a total return to the pre-burn state. It is important that the child and family know the limits of plastic surgery.

When the child leaves the hospital, he will be returning to an environment which has changed a lot from the child's viewpoint. The environment will depend on the age of the child. Very young children will go home to spend most of their time with parents, relatives and babysitters. Older children will return to school and must deal with the reactions of their friends, teachers, and other social contacts. This can be a great source of stress, and many steps must be taken to ease the transition from isolated ward life to full integration at school and in the community.

At the Hospital for Sick Children, this integration begins as soon as possible after the acute phase of the burn treatment. The child is visited daily by a teacher and is expected to keep up with his schoolwork. Visiting by friends is encouraged as soon as is reasonable considering the medical status of the child. The child's world gradually expands from the isolation room to a shared room, to free reign of the ward. Ward 8E at the Hospital for Sick Children is a wing off the main elevator lobby, but it has no other ward beyond it, and thus does not serve as a thoroughfare. The only people on the ward are patients, hospital staff, or visitors to other children in the plastic surgery service. It is a big step for the child to leave 8E, and the child is well prepared for this beforehand. When the child is ready to venture out he does not go alone, but is accompanied by a favoured member of the burn team. Visits to the cafeteria for a snack are quite stressful at first, but allow the child to get accustomed to the reactions of others to his disfigurement in a somewhat sheltered environment, with support from someone whom the child trusts. Visits to the cafeteria lead to walks outdoors, and outings to McDonald's or other local sites that the child want to visit. Again, a caretaker accompanies the child to buffer the stress of public appearance. A great deal of education is required during the rehabilitative process. The child and the family must be educated as to the child's limitations and rehabilitation expectations, as well as being prepared to deal with the reactions of others.

The community to which the patient is returning must also

be educated, so that its members will have a reasonable expectation of the condition of the child who will return to their society. This education can be accomplished by a seminar discussion in the school before the child returns. The seminar is ideally headed by the school nurse and a member of the burn care team who is well aware of the child's condition and who will ultimately accompany the child to school on his first day back. This information session serves two functions; not only does it prepare the school for the child's return, but it also serves an important function as an accident prevention campaign. By making the other students aware of the circumstances of the child's accident, it is hoped that similar accidents can be prevented in the community.

The aim of the information session is to familiarize the class with the burned child, who has been absent for quite a while, and will look and behave considerably differently than his appearance and behaviour prior to the burn. The class should be told about what has gone on in the hospital, and about the treatment program that the child will be following when he returns home. It is usual for splints and Jobst (R) garments to be passed around the class and tried on by the other children, so that they may see things from the burned child's perspective. By familiarizing the class with the burned child's capabilities and limitations a lot of tension will be removed from the return to school. When the other children are left ignorant of the child's problems they may respond in an aggressive way or avoid the affected child. The burned child is a reminder to them that they too may be susceptible to such accidents and their consequences. This situation should be avoided through the education of the other children



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in order to prevent behaviour which would isolate the burned child, and undermine the child's self-esteem.

The child's relationships with family and friends is one of the most important factors in returning the child to a state of self-confidence and acceptance in society. A study of patients' long-term adjustment to their visible stigma revealed that acceptance by peers was one of the major worries of burn victims in the rehabilitation phase⁸. Seventy-seven percent of patients said that they were helped through this phase by the presence of someone who told them that:

1. they cared about them whether they had scars or not
2. that what was important about a person was what was on the inside
3. that they were capable of doing anything that they set out to do.

Praise given to the child helps in building self-esteem, and emotions expressed by him should never be belittled or ignored. Parents can help in the adjustment by providing clothing which will cover the majority of the burned area, and by exposing the child gradually to outsiders.

Many studies have been done to evaluate the long-term effect of the burn on the patient's social fate and psychological status. The age of the child is significant; Sawyer, Minde, and Zukder¹³ found that adolescent burn victims show a markedly poorer psychosocial adjustment than do younger children, based on standardized behaviour ratings. However, another study showed that only the age of the victim at the time of the survey was related to self-esteem, and not the patient's age at the time of the burn⁸.

The sex of the child is important in determining the type of stress to which the child will be exposed. In general, boys tend to find physical disability hard to overcome, but are not too concerned about their cosmetic appearance. Girls react in the opposite fashion; they are less concerned with their physical limitations and are more stressed by their visible stigma. Boys aged 12 to 16 tend to have poorer results on school competence tests than their peers, whereas girls do not show this pattern¹³. This effect might be due to time lost from school, or perhaps there is a tendency for slower children to get burned in the first place.

When adolescence approaches, both the sex of the child and the location of the scars can lead to added difficulties. In girls whose chests are severely scarred, breast enlargement will not take place symmetrically and further plastic surgery may be required. Scars involving the external genitalia may be a cause for concern during adolescence and can lead to the fear that sexual relationships will not be possible, and that the adolescent will not be attractive to the opposite sex. Women often fear that pregnancy will not be possible due to severe abdominal scarring.

The frequency of parental visiting was shown to be significant in determining the post-burn emotional state of the child in a survey done at the Birmingham Accident Hospital¹⁸. A high rate of parental visiting corresponded to a low rate of emotional disturbance among the children. The frequency of visits is dependent upon both the parents' commitment and the hospital's policy. Today, many hospitals are increasing the number of hours open to visiting parents of children on the

burn ward. At the Hospital for Sick Children parents can visit their burned child at any time, and mattresses are provided for those parents who may wish to stay overnight in their child's room. The only restriction in this policy is that parents are not allowed to be present in the tub room during actual treatment procedures. Of course the frequency of parental visiting is proportional to the parents' desire to spend time with their child, and their ability to get to the hospital on a regular basis. Staff counselling to encourage parental visiting and a variety of social services to facilitate visiting may help in this endeavour.

The size and location of burn scars do affect the long-term adjustment of the paediatric burn victim. The size of the area burned along with the severity of the wound determine the duration of initial hospitalization, and predict the amount of rehabilitation which will be required. Children with face and hand burns appear to be at particular risk for deterioration in their psychosocial functioning as they enter adolescence¹³. Those with scars only on their backs are least affected by their stigma. Another important aspect of a third degree burn is the physical problem of heat and cold intolerance. Heat is tolerated poorly because grafted areas do not contain sweat glands, and cold is poorly tolerated because of poor vascular supply to the scarred areas. This can limit the child's participation in some social activities and lead to isolation from peers. An overall study of 89 burn survivors showed that they were not statistically different from the normal population in terms of their attitudes toward, or participation in, work and marriage, nor in their level of emotional problems⁸.

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The Child at Special Risk

The majority of children who suffer accidental burn injuries survive go on to lead healthy, productive lives. It is undeniable that these children must face a number of social stresses that their peers do not encounter, and although most of these children reach adulthood well adjusted, there is an unfortunate minority consisting of children with psychosocial problems. In the long term, patients who are not well adjusted may manifest excessively aggressive behaviour to counter their lack of self-confidence, or they may isolate themselves from peers out of fear that they will be rejected. Withdrawal from relationships with friends is more common than withdrawal from the general public. Teasing and name-calling by peers is very stressful for the child and leads to depression and loneliness. Learning difficulties at school are often associated with discipline problems at school and at home.

It is not feasible in today's health system for an in-depth evaluation to be made on every child who is admitted to the burn ward. Several attempts have been made to produce a simple method of screening families in order to detect children who may be at high risk for post-burn emotional problems. An excellent example is the family assessment tool developed for use in a 300 bed children's hospital in Ohio in their 12-bed burn unit¹⁶. This tool consists of a family assessment on admission, a composite family assessment, and a record of the child's developmental testing, which is to be completed at least once a month in order to assess any changes. Further data for psychological evaluation comes from careful, detailed, lengthy observation of behaviour, symptoms, reactions, and interactions between the child and his parents or caretakers¹⁴.

Return to the Community

When the child returns to the community, many services must still be provided, either on an outpatient basis, or through services available in the patient's community. The Ontario Crippled Children's Centre is useful as a supportive environment for the transition from hospitalization to home life. Home care nursing and physiotherapy are available in some communities, and local agencies can also provide psychological support and psychiatric counselling where required. Local services have the advantage of being more accessible for the child, and also help to integrate the child into his own community. Unfortunately since burns are uncommon, the local facilities are unlikely to be equipped to deal with the burned child.

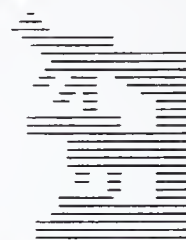
The arrival of the child into community-based health services may not be welcomed, due to the lack of exposure of the local health workers to such children and a lack of interest due to the repulsive and doubtful nature of burns. These attitudes necessitate special counselling along with training of those who will be assisting the child. This can be accomplished with the participation of members of the burn team from the hospital. Another problem with community-based long term therapy is that the local workers do not have the same sense of investment in the child as do the members of the burn team who have followed the child right from the time of the accident.

It is always desirable to see the child for follow-up at least a few years after the return home, and assess the child from both a physical and a psychosocial viewpoint. Practically, this is rarely accomplished and compliance is generally low, even for return visits to the surgeon to determine the need for further reconstructive work. Social and family support of the child tends to drop off, and after a few years the child's self-esteem wanes.

The approach of adolescence is very stressful for these children, who are often quite precocious and worry about adolescence long before their peers do. It is important that the child's family and family physician realize the potential for problems to develop and send the child for assessment and possibly counselling should these problems arise. At the Hospital for Sick Children a group program for burned teenagers is underway with meetings held on a regular basis to discuss the special problems which these teenagers are encountering.

Conclusion

The accidental burning of a child is a shocking and painful experience for the child and his family. Hospitalization is prolonged and stressful for the child, his family, and all of the members who make up the burn care team. Researchers have begun to study the paediatric burn victim with the goal of elucidating and eliminating many of the sources of stress inherent in the present methods of burn treatment and rehabilitation. In this paper many of the findings of previous workers have been presented in such a fashion as to stimulate thought aimed towards making the recovery from an accidental burn injury less stressful for the child and his family. The Toronto Hospital for Sick Children has provided an example of a burn unit geared toward caring for the needs of the whole child, both physical and emotional. Beyond the confines of the tertiary care hospital burn unit the onus is on all members of the health profession to recognize and assist in meeting the special needs of the person who has experienced a severe burn in childhood. The potential is always present for the survivor of a severe burn injury to reenter society and take up a position of high esteem. We as medical professionals and members of these children's communities have a responsibility to treat them as they deserve to be treated — with respect for them as individuals and valuable members of society.



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Acknowledgements

I would like to thank Dr. W.K. Lindsay and the Department of Plastic Surgery for encouraging me to study the Burn Unit at the Hospital for Sick Children, Toronto, Canada. I extend special thanks to Mr. I. Griffiths, Department of Social Work; Ms. B. Cormier, Head Nurse of the Burn Unit; and Dr. A. Lefebvre, Department of Psychiatry for their assistance in researching this paper.

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A Historical Review of Microvascular Surgery

Bruce R. Pynn* and John C. Marotta 8T6

Microvascular surgery is one of the youngest members in the large family of specialized surgical techniques. However, it has matured rapidly in its 24 years of existence. Microsurgery may be broadly defined as surgery performed with the visual aid of an operating microscope. Although microvascular surgery uses sophisticated microscopes, instruments, and sutures, the fundamental surgical techniques and procedures are similar to those developed for larger vessels nearly a century ago.

The history of microvascular surgery dates back to the late 1800's when many physicians foresaw the potential value of the small vessel anastomoses as a reparative and reconstructive technique. The first successful end-to-end anastomosis was reported by Jassinowski in 1889 on the carotid arteries of sheep.²⁰ Several years later, in 1897, Murphy experimented with various suture techniques on severed vessels, but reported little success.^{23, 28} Not to be discouraged, he successfully applied one of his techniques on a patient with a lacerated femoral artery. This may have been the earliest successful clinical anastomosis. In 1901, Payr developed "magnesium anastomotic tubes" that were inserted into the lumen of vessels and the vessel ends sutured over the tubes.³³ Although, the tubes seemed to be thrombogenic, Hofner used them in replanted hind legs of dogs and obtained survival for up to ten days.¹⁷

There was much debate around this time about which layers of the vessel wall to include in an anastomosis. Alexis Carrel and others believed that piercing the intima with a needle and suture would result in thrombosis.^{7,20} However, in 1899, Dorfler showed experimentally that by using fine, round needles and silk all three structural layers of the vessel could be included in the anastomosis.¹⁵ Because of the high patency rate that was achieved, this technique was gradually accepted as the standard.

In 1902, while still experimenting in his native France, Alexis Carrel developed the first reliable suturing technique for anastomosing blood vessels.^{7,20} Dr. Carrel listed four basic steps in his technique: (1) application of rubber-shod clamps to control bleeding and approximate the vessel ends; (2) resection of any adventitia covering the vessel lumen; (3) placement of three equidistant guide sutures 120° apart; and (4) conversion of the vessel to an equilateral triangle by eccentric traction of the guide sutures, followed by insertion of continuous over and over sutures to complete the anastomosis (Figure 1). Carrel joined Guthrie at the University of Chicago in 1904, and two years later, used the new technique to investigate replantation and homograft transplantation in the canine hindlimb.^{8,9,10} Carrel and Guthrie also performed

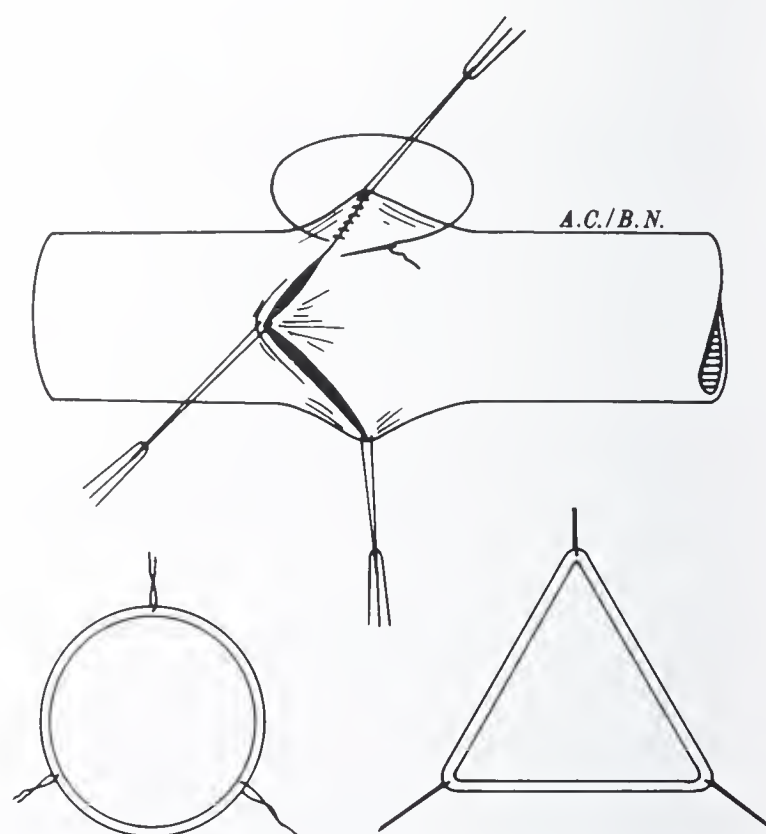


Fig. 1: A reproduction of the original illustrations drawn by Alexis Carrel from his classic 1902 article describing the anastomosis of blood vessels.⁷ (From R.K. Daniel and J.K. Terzis, *Reconstructive Microsurgery*, Little, Brown and Co., 1977 pp.62. By permission of the author, R.K. Daniel)

the first experimental vascularized composite tissue transplantation of canine intestine in the reconstruction of the cervical esophagus.^{9, 16} Carrel's dependable triangulation technique paved the way for whole-organ transplantation and free tissue transfers of the future. This achievement earned him the Nobel Prize in physiology and medicine in 1912. Following his receipt of the Nobel Prize, his method and its potential became known to the medical field around the world. However, Carrel's technique was not immediately applied clinically because of the high rate of infection, especially in battlefield injuries.

The next sudden surge of interest in vascular surgery was delayed until the limb salvage statistics became apparent during World War I and II. After reviewing the arterial injuries of the American Forces during World War II, DeBakey

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and Simeone stated that widespread tissue damage and loss of arterial substance was usually too severe to permit successful end-to-end anastomoses.¹⁴ They reported that less than 4% (81 of 2471) of arterial injuries were sutured. Ligation of vessels in vascular injuries to extremities was continued and gangrene occurred in 50% of them. During these war years, small gains were made in vascular surgery by further experimenting with suture techniques. This included examining the optimum placement of sutures around the vessel and determining total number of sutures a vessel would tolerate.³⁶ As well, in 1932 Pupini developed a vascular approximator similar to the ones used clinically today.³⁴ This clamp brought the severed vessel ends close together without the aid of an assistant as well as eliminating the problem of vessel retraction. In addition to these technical advances, and probably more important, were the achievements made in other fields of medicine that would benefit vascular surgery. These included the development of antibiotics, anticoagulants, agents for the control of arterial spasm, and the ability to transfuse and anesthetize patients safely.

Although the field of vascular surgery was expanding rapidly, it came to an abrupt halt when encountering vessels less than 4 mm in external diameter, even in experimental animals. Most vascular surgeons prior to the 1950's still felt that it was not worthwhile to repair arteries below the knee or elbow, and if injured, these vessels were commonly ligated. This often resulted in gangrene and ultimately, amputation. But, in 1953 during the Korean War, Jahnke and Seely reported only 8% amputation after repair of major arteries (femoral, popliteal, axillary, etc.) compared to 50% amputation after simple ligation.¹⁹ Arterial repair had finally been clinically established as the method of choice over ligation for the treatment of major arterial injuries.

Further advancement in vascular surgery awaited the development of delicate instruments, suture materials, needles and the use of the operating microscope. Although Nylen of Sweden first used a simple monocular microscope to perform minor ear surgery in 1921,²⁹ the microscope was not employed for vascular surgery until 1960 when Jacobson and Suarez used it to demonstrate the feasibility of anastomoses on arteries between 1.0 and 3.0 mm in diameter.¹⁸ The authors stated that the average 3.0 mm vessel required 15 to 25 stitches with 7-0 silk, and that they achieved a patency rate of 100% using a continuous suture technique.

The use of the microscope, micro-instruments and refinement of the basic surgical techniques opened up a new dimension for surgeons in clinical medicine. This new subspecialty of vascular surgery, microvascular surgery, revived many questions about the microvascular anastomoses such as how many sutures could a small vessel sustain, how large a bite size to take, and how much adventitia to remove. Many surgeons of that time believed the more sutures the better. This was later proven false experimentally by Colen, who reported that crowding of the sutures at the anastomosis site caused necrosis of the vessel edges.¹² However, other technical challenges remained. The smallest suture available in the later 1950's and early 1960's was 7-0 silk. Many researchers predicted that 8-0 to 10-0 monofilament suture would have to be developed before further advances were to be made.

At this same period in time researchers in Japan, the Soviet Union, the United States and other parts of the world were experimenting with limb replantations. Lapchinsky of the Soviet Union reported in 1960 that he had long-term functional follow-ups on dogs with their hind limbs replanted after being perfused with heparinized Ringer's Lactate, followed by cooling to 4°C.²⁴ Americans, Snyder, Knowles, Mayer, and Hobbs were preserving canine hindlimbs on a pump oxygenator for up to 24 hours followed by successful replantation.³⁷ Onji of Japan exhibited particular interest in canine limb replantation following warm ischemia.³² He had encountered several clinical cases of amputated extremities where blood flow had been re-established but the ischemic tissue subsequently became necrotic for other reasons such as infection or metabolic acidosis. In many of these cases, either the revascularized limb had to be amputated or the patient died.

In May 23, 1962, Malt and McKhann performed the first successful clinical replantation of a 12 year old boy's arm.²⁵ Following this widely publicized case, successful replantations of amputated limbs were achieved in numerous countries around the world. In November of that same year, Kleinert and Kasdan replanted an incompletely amputated thumb having repaired the digital artery using only binocular loupes.²¹

Although surgeons were aware of the good results being achieved anastomosing 1.5 mm vessels, they were hesitant to apply this new technology. Buncke, a plastic surgeon, and Yasargil, a neurosurgeon, quickly accepted the operating microscope and provided the impetus for rapid growth in this new field. They developed many new instruments and aided in the refinement of microsurgical techniques.^{5, 43} Buncke developed a rabbit ear experimental model to validate digital replantation and free flap transfer.^{4, 5} He also reported the earliest experimental toe to thumb transfer in monkeys.³

In 1963, Onji observed Jacobson perform an anastomosis on "tiny vessels" under the operating microscope in New York. Onji returned home to Japan very impressed. He obtained a few of Jacobson's microinstruments and samples of Ethicon's 8-0 monofilament nylon suture (the smallest suture available at that time). The following year, the Japanese were able to obtain a Zeiss operating microscope and in 1965, Komatsu and Tamai²² replanted the first completely amputated thumb using the operating microscope and the 8-0 nylon suture given to Onji by Jacobson two years earlier.⁴⁰ Within a short period of time, a number of successful limb and digital replantations as well as experimental free flap surgery were reported in the literature.

In 1969, Cobbett performed the first toe to thumb transfer on a patient to replace an amputated thumb.¹¹ Buncke and many other surgeons also performed similar clinical toe to thumb transfers in the early 1970's.^{6, 26, 30} Buncke and his colleagues preferred to use the big toe while Tamai chose the second toe since the Japanese wear clogs year round.^{39, 40}

The limiting factors were again the size and diameter of the needle and suture. The smallest needle available at that time was tapered with a diameter of 140µm. In the early 1970's, Yasargil,⁴³ Acland,^{1, 2} and O'Brien³¹ worked closely with the suture companies to develop a sharp microneedle

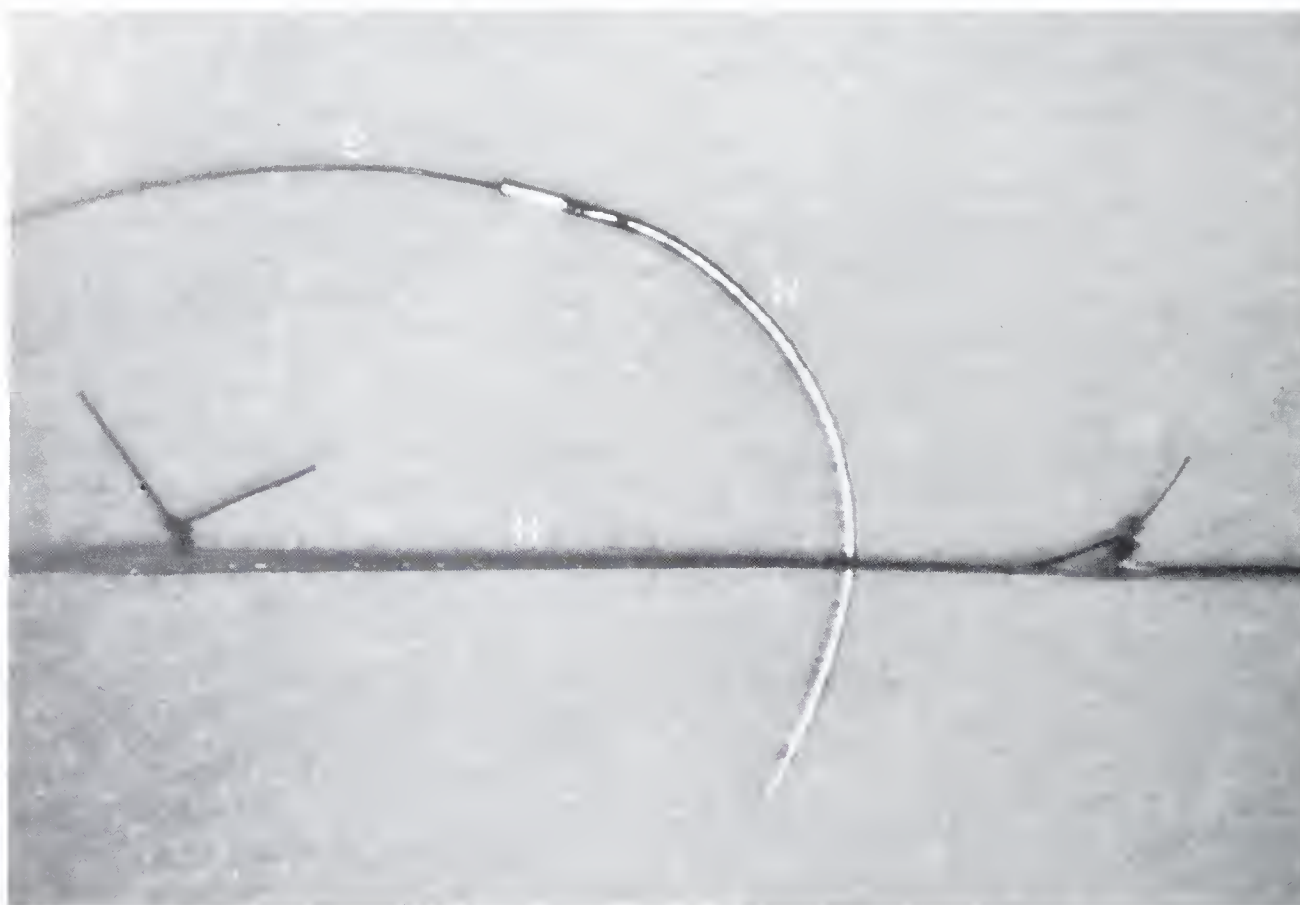


Fig.2: A 75 u microneedle (N) with 22 u nylon (S) (10-0) passing through the center of a human hair (H), between two knots tied in the hair. (75 u = 0.003 in.) (Photograph taken by Claudio A.L. Nigra)

with a diameter of less than 100µm. They came up with a 70µm needle that was finely sharpened and joined by 18µm nylon (Figure 2). This new development made replantations, correction of traumatized or stenosed vessels, and clinical and experimental research more reproducible.

The 1970's were a period of many clinical firsts in the field of microvascular surgery. In 1972, McLean and Buncke carried out the first composite free flap by successfully transplanting omentum to an extensive scalp avulsion.²⁷ The first free skin flap was transferred from a patient's groin to cover a defect on the ankle by Daniel and Taylor in 1973.¹³ That same year, plastic surgeons in China performed the first free vascularized muscle transfer to restore lost forearm flexor function.³⁵ Taylor carried out both the first free vascularized bone transfer in an extremity⁴¹ and the earliest free nerve transfer.⁴² In 1976, Tamai succeeded in replanting the amputated penis of a schizophrenic patient.³⁸

In the late 1970's and early 1980's the literature was inundated with reports of successful microsurgical replantations, free flap transfers, and experimental results. Today, microvascular surgical procedures are established as reliable and effective reconstructive techniques. Improvements in vascular surgical techniques and the development of microvascular surgery have dramatically expanded the scope of reconstructive surgery over the past 100 years.

Acknowledgements

The authors wish to thank Drs. Nancy H. McKee and Ralph T. Manktelow for their advice and valuable comments, and especially Dr. William Kuzon, Jr. for his invaluable assistance during the preparation of this manuscript.

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Fournier's Gangrene

Paul Joo 8T7, *Walter J. Peters, M.D. Ph.D., F.R.C.S.(C)

Fournier's disease — gangrene of the penis and scrotum — is an uncommon condition which was first described in 1883. During the past 6 years, 5 patients have been admitted to Toronto General Hospital with this diagnosis. Four patients demonstrated preceding trauma (ischio-rectal abscess, puncture wound, surgery). Four patients had pre-existing debilitating problems — diabetes, rectal carcinoma, acute lymphocytic leukemia, alcoholic cirrhosis.

Appropriate treatment must include urgent radical surgery to remove all necrotic tissue, and combination antibiotic therapy directed against the likely organisms — aerobic gram negative rods, gram positive cocci, and anaerobes. Clindamycin in combination with tobramycin or gentamycin proved to be effective in this series. With early aggressive treatment, the mortality rate can be expected to be less than 10%.

Fournier's gangrene — a necrotizing, subcutaneous infection of the penis and scrotum — was first described¹ by the French venerologist, Fournier, in 1883. He described 5 previously healthy patients in whom the condition had an abrupt onset and a rapid progression. In that pre-antibiotic era, he stated that the condition was idiopathic.

Today, much more is known about this fascinating condition. Most cases probably develop by one of three possible mechanisms: a) local trauma, b) extension from a urinary tract infection, or c) extension from peri-anal or ischio-rectal area.^{2, 3, 4} Many patients have diabetes mellitus or another specific debilitating condition and appear at any age — from newborns to the elderly.^{2, 4} The typical bacteriological flora usually includes: aerobic gram negative rods, gram positive cocci, and anaerobes — especially *Bacteroides fragilis*.^{2, 5} The condition is usually accompanied by fever and toxemia and is often life-threatening.²

During the past 6 years, 5 patients have been referred to the Toronto General Hospital for treatment of Fournier's gangrene. This study involves an analysis of these patients.

PATIENT 1

A 45-year old man presented at our Emergency Department 48 hours after drainage of an ischial rectal abscess at another hospital. Examination revealed massive swelling and cellulitis of the penis, scrotum, and lower abdominal wall (Fig. 1), with evidence of a fecal, anaerobic odour. He was started on intravenous antibiotics (clindamycin, penicillin, and gentamycin), and was prepared directly for surgery. At operation, considerable skin involving the penis, scrotum, and lower abdominal wall was devitalized and this was excised. He then underwent hyperbaric oxygen treatment and was then taken back for a further excision the following day, at which time the remainder of the necrotic skin and soft



Fig. 1 — Patient 1: early gangrene of the penis and scrotum.

* from the Toronto General Hospital and the Division of Plastic Surgery, University of Toronto.

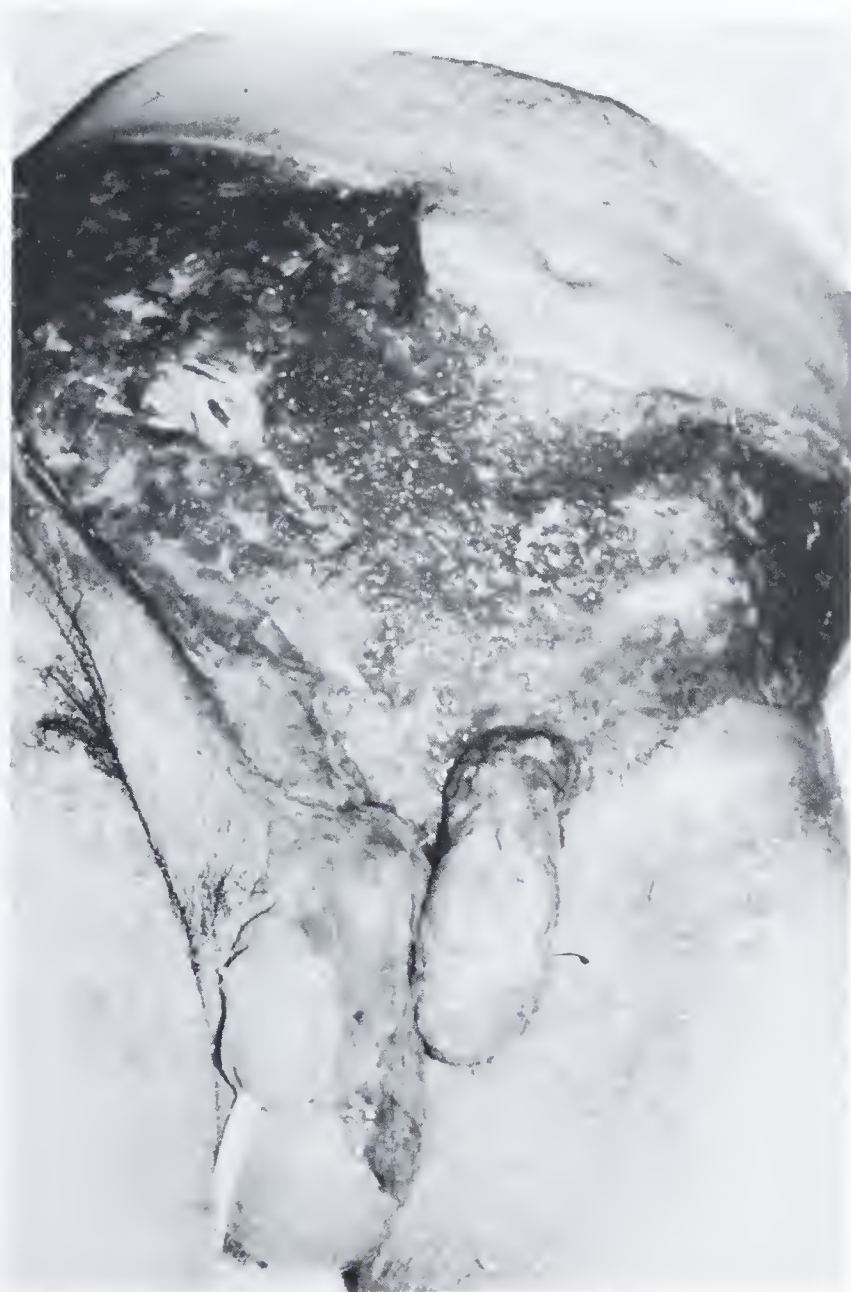


Fig. 4 Patient 2: after extensive debridement of necrotic tissue from penis, scrotum, and abdominal wall.

tissue was excised from these involved areas (Fig. 2). The exposed areas were then treated with wet to dry dressings for 10 days, and the penis and abdominal wall were re-surfaced with split thickness skin grafts, and the testes were buried into pockets in the medial thighs. (Fig. 3) These wounds healed uneventfully and the patient was discharged from hospital. His only problems following that have been recurrent bouts of lymphangitis of the penis which have responded to antibiotic therapy. He remains sexually active and has no other specific problems.

PATIENT 2

A 68-year old man was admitted through the Emergency Department with impending gangrene of the penis, scrotum and lower abdominal wall, 2 weeks after he sustained trauma to his perineal region, when he accidentally fell on his lawnmower and the wheel-adjustment lever pierced his perineum! He had swelling and pain in the penis and scrotum within 2 days but did not seek medical help for a full week. At that time, in a rural area, he was placed on oral antibiotics and returned several days later with a fully developed Fournier's gangrene.



Fig. 5 Patient 2: after re-surfacing penis and abdominal wall with skin grafts and burying left testicle into a subcutaneous thigh pocket.

On arrival, he was started on clindamycin and ampicillin and prepared directly for surgery which involved radical debridement of the involvement skin and soft tissue from his penis, scrotum, and lower abdominal wall. (Fig. 4). A considerable area of his abdominal wall was involved. The open areas were treated with dressings for about 10 days and then were covered with split thickness meshed skin grafts, and the exposed left testicle was placed into a pocket in the medial left thigh. These wounds healed uneventfully (Fig. 5). He was subsequently discharged from hospital and has had no further problems.

PATIENT 3

A 61-year old man originally underwent an anterior resection of his recto-sigmoid colon for rectal carcinoma. He went on to develop a colonic fistula, which then progressed to dehiscence of his abdominal wound. Subsequently, he developed a picture of gangrene of his scrotum and penis which was treated with radical surgery. The exposed areas were then treated with local skin grafting. He was subsequently discharged from hospital and made a complete recovery.



Fig. 2 Patient 1: after second debridement of necrotic tissue.



Fig. 3 Patient 1: after penis and abdominal wall were re-surfaced with split thickness skin grafts, and testes were buried into subcutaneous pockets in medial thighs.

PATIENT 4

A 71-year old man, who was a diet-regulated diabetic, developed an ischiorectal abscess which was drained at another hospital. He subsequently developed gangrene of his scrotum and penis and was admitted through our Emergency Department. He was started on intravenous tobramycin, cloxacillin, and clindamycin and underwent radical debridement and subsequent skin grafting. He made a full recovery and was subsequently discharged from hospital. His complications, however, included tobramycin nephrotoxicity and a fistula-in-ano.

PATIENT 5

A 44-year old man, with a known diagnosis of acute lymphocytic leukemia, was admitted through the Emergency Department with an incarcerated inguinal hernia, alcoholic hepatitis, and Fournier's gangrene of the scrotum, abdominal wall, and left upper thigh. Unfortunately, he died within hours of admission. Death was attributed to sepsis.

DISCUSSION

The 5 patients in our series with Fournier's gangrene ranged in age from 44 to 71. All had definite pre-disposing factors: 4 had a history of local ischial or perineal trauma, and 4 had debilitating conditions (diabetes, rectal carcinoma, leukemia, alcoholic cirrhosis) (Table 1).

All patients were referred after the diagnosis of Fournier's gangrene had been made. Several of the patients had been started on antibiotics prior to arrival at our hospital. Positive wound cultures demonstrated multiple aerobic and anaerobic organisms, suggesting the possibility of a synergistic interaction among different bacterial species.² Antibiotic therapy was directed against the anticipated flora — specifically: gram-negative bacilli, gram positive cocci, and anaerobic bacteria, including *Bacteroides fragilis* (Table 1). A reasonable choice of antibiotics appeared to be clindamycin (for gram positive and anaerobic bacteria) and tobramycin or gentamicin (for gram negative rods).

All patients underwent urgent radical surgery with ex-

Table 1 Summary of patients with Fournier's gangrene.

PATIENT	AGE	PREDISPOSING FACTORS	WOUND CULTURE	ANTIBIOTICS	COMPLICATIONS	OUTCOME
1	45	Ischiorectal abscess	E. coli, S. aureus, enterococci, bacteriodes	Clindamycin Penicillin Gentamycin	Lymphangitis of penis	Complete recovery
2	65	Diabetes, puncture to perineum	E. coli, anaerobic streptococci multiple bacteriodes	Clindamycin Ampicillin	None	Complete recovery
3	61	Resection of rectal carcinoma	<i>Pseudomonas aeruginosa</i>	Penicillin Chloranphenicol	Dehiscence abdominal wound, colonic fistula	Complete recovery
4	71	Diabetes, ischiorectal abscess	Negative	Clindamycin Cloxacillin Tobramycin	Fistulo-in-anus, tobramycin toxicity	Complete recovery
5	44	Acute lymphocytic leukemia, chemotherapy, alcoholic hepatitis	Negative	Amoxicillin Clindamycin	Sepsis	Death

cision of the involved necrotic areas. Antibiotics are only an adjunct to this more important definitive treatment. Three patients had further debridement after 24 hours. One patient underwent hyperbaric oxygen therapy. This may be useful, but only in addition to surgery and appropriate antibiotic therapy.

Each of our surviving patients underwent a single uneventful skin grafting procedure 10-14 days after their initial surgery. In two patient, exposed testes were placed into subcutaneous pockets in their medial thighs. Secondary scrotal reconstruction⁸ was considered in the latter two patients, but was declined by them.

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On The (Mis)Use Of Technology In Health Care

John S.D. Suen, S.M. 8T6

As medical students still learning the art and science of interviewing and examining patients, we haven't yet used many of the wonders of medical technology. Undoubtedly, our reliance on modern technology will become second nature. However, as we come to appreciate technology, will we also recognize its pitfalls?

Technology in health care is here to stay. The development of new drugs and the use of diagnostic devices such as computerized tomography and doppler ultrasound are only a few advances that are having a revolutionary impact. Further expected developments in genetic engineering and artificial organs, to name just a few areas, will also greatly influence medicine. Clearly and indisputably, medical technology is and will continue to be beneficial to society.

However, not all apples are sweet. Some of the unsavoury aspects of technology are due to the inflexibility of our health care system; others are due to the pervasive nature of medical technology.

In the first place, there is too little restriction on the cost of advances. This is in part due to the system of third-party payments. Doctors are often indifferent to the expense of new equipment the offer only marginal improvement in care. Consequently, there is an overly rapid diffusion of new technology.

Another reason for the rapid diffusion is that technology potentially brings in substantial income for both physicians and hospitals. Typically, the more expensive the technology, the higher the income. Even simple laboratory tests can generate high amounts of income when many doctors use the equipment. Unfortunately, these inducements can lead to uncritical release of poorly tested devices and procedures that may turn out to be useless or even dangerous.

Also unfortunate is the social inequity or two-tier system that can result from injudicious use of technology. Especially in locales where there are no third-party payment plans, the potentially high costs of technology can exclude the poor from receiving proper care.

Second, the medical establishment sometimes impedes the implementation of technology that could minimize health care costs. Instead it encourages those new tools that it controls. For example, the development of technology applicable to prevention, early detection, and rehabilitation is often downplayed compared to the more expensive therapeutic technology.

Finally and perhaps most relevant to us is the danger of substituting that infallible (?) electronic monitor next to the

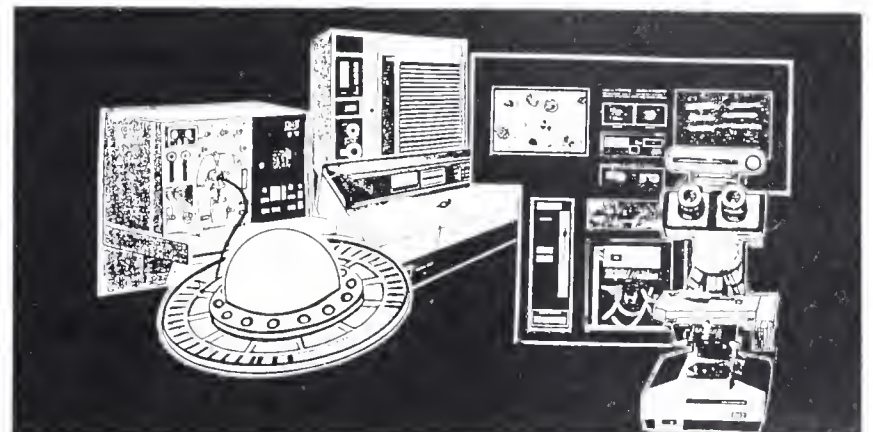
patient for the patient's physical and mental signs.

Technology... the knack of arranging the world so that we can't experience it. . .

Max Hirsch

Max Hirsch was arguably a misinformed conservative, but his view underscores an increasing concern in the all-pervasive use of technology: Will we ever rely on technology to the extent that we forget to treat the patient as an individual? Hopefully not.

The scientists and engineers will continue to meet the challenge of providing exciting new technology. It is our challenge to use it in an innovative, responsible, and sensitive way.



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Notes From The Underground

Surviving Medical School: Reviewing The Literature

P.A. Stewart 8T7

Accepted at last into medical school: the final triumph! Gone are those days (we think) of laboriously studying the mind-numbing drivel of Arts and Sciences courses. We have now finally arrived at the true essence of all we are trying to achieve. We are finally on our way to learning relevant material; or so we think. Then, subtly at first, there is an inkling, a shadow of a doubt that all is not completely well in the kingdom of medicine. Medical school does not seem to be as pertinent as we had hoped. There is a suspicion afoot that medical school is yet another obstacle to overcome; that we are mere neophytes, sworn to secrecy, in a new influential system that will once more tax our abilities to survive. It was in response to this murmured, let's say, rumoured fear that I turned to that wealth of underground medical literature that documents obsessively, detail by detail, the survival of other doctors in their training. And it was thus that I was found in the last few weeks, surreptitiously cradling books wrapped in brown paper ignominiously stuck in my Immunology Syllabus. I bring you some of the fruits of my tireless survey.

The literature on medical training seems to be divided into three categories. Writers of "medical school survival journals" seem to dwell upon their first year in medical school, their internship year, or their residencies. It appears that first year medicine, internships, and residencies are seen as three fiery hoops through which you must pass to survive your training; three stages or mythic thresholds you must cross to become a true acolyte of the system. I have reviewed seven of these books that document the particulars of each of these stages. My actual choices are arbitrary and are not meant, by any means, to be comprehensive of the large market of survival literature available. Instead, they are meant to give some indication of the "underground literature" available, their different stances, and perhaps some personal advice on how you too can cash in on your experiences. The books surveyed are as follows: Charles LeBaron's *Gentle Vengeance*, Martin Shapiro's *Getting Doctored*, Samuel Shem's *The House of God*, Dr. X's *Intern*, Elizabeth Morgan's *The Making of A Woman Surgeon*, Jane Paterson and Linda Madara's *Woman/Doctor*, and Michelle Harrison's *A Woman in Residence*.

In *Gentle Vengeance*, Charles LeBaron describes his medical education as a first-year medical student at Harvard Medical School. LeBaron is atypical as a medical student. Not only is he 34 years old but also he comes from a literary background combined with jobs of "semi-menial capacity" in various hospitals and institutions. He asks: "With that kind of scanty and eccentric background, could I survive?" (p.14). The next 200 pages of *Gentle Vengeance* is devoted exclusively to LeBaron's survival of first year medical school. The journal shifts in time between the academic year of 1978-9 and his experiences in the health care field and personal life, which apparently have fostered his disenchanting view of the medi-

cal profession. Indeed, his book focuses on what it is in medical training that "chops up nice kids and turns them into tough, disinterested doctors". LeBaron's "chief complaint" about Harvard is its deadly proficiency as an inertial, conservative educational system that is unwilling to change. When LeBaron and his classmates, for instance, try to switch their Saturday lectures to the week, they are thwarted by a hostile bureaucracy which argues for the persistence of the Saturday classes on the grounds of academic tradition.

Medical school, says LeBaron has a trade-school mentality. Little effort is spent in educating the student as thinking scientists. Students become repositories of trivial details that can be spewed at will during multiple-choice examinations. He describes the toll taken by long hours of study, of rote-memorization for exams which make "Trivial Pursuit" a significant game. He also depicts the uncertainty experienced by the medical students in a system where what is expected of them is never clearly expressed. He gives voice to the prevailing fear of the calculated duplicity of the teaching faculty, where what was promised not to be on the exam appeared with ominous regularity. Although naive at times, LeBaron does succeed in capturing the atmosphere of first year medical school: the boredom, the "hissing", and even the "nostalgic" odours of the anatomy lab. It is this milieu of experiences that he indicts as the cause of the weary cynicism rampant in the class by the end of first year:

By the end of a year of dog labs, corpses, continual memorization and no patients . . . these expressions of flippancy, cynicism, the sarcastic smiles that had been so conspicuous by their absence back at orientation were already starting to spread through the class like some sinister psychological tide. (p.213)

For the most part, though often poorly written, *Gentle Vengeance* is an unrelenting portrayal of the Harvard Medical School's failure to train its future physicians as thinking, caring individuals.

In medical schools, there is a whispered sentiment that if you rock the boat, you will pay a price. Near the end of *Gentle Vengeance*, LeBaron encounters this philosophy over coffee with friends where they warn him that if he writes an exposé, "mysteriously the only place that'll accept [him] for an internship will be in Ulan Bator or somewhere." It was at this time that I flipped conscientiously to the cover and discovered that Charles LeBaron was in third year medicine when this book was published. I could not help speculating about how was he enjoying Ulan Bator.

Samuel Shem M.D. in *The House of God* (1978) takes more precautions than the intrepid Charles LeBaron. *The House of God* is an irreverent "fictitious" account of the internship year. It is written *after* Shem has completed his residency in psychiatry. *The House of God* opens like a lurid,

doctor-nurse drama with immediate titillating "bare ass and tit" scenes ready to gratify the voyeurism of any puerile audience. However, *The House of God*, though it continues to grace its pages with occasional explicit sex scenes, has a less voyeuristic agenda in mind. It opens with the cynical aphorism, "We came here to serve God, and also to get rich" (p.19). God is, of course, medicine, and to get rich, you must rise through the hierarchy of God. The actual House of God medical hierarchy is depicted as a pyramid — a lot at the bottom and one at the top. Shem writes; "Given the mentality required to climb it, it was more like an ice cream cone — you have to lick your way up. From constant application of tongue to next uppermost ass, those few toward the top were all tongue. A mapping of each sensory cortex would show a homunculus with a mammoth tongue overlapping an enormous portion of brain." (p.21-2) At the bottom of this "slurping" pyramid is the intern. Shem in *The House of God* captures both the subjugation and the ultimate rebellion of the intern against the malevolent influences of this less than admirable hierarchy.

At all times, witheringly and raucously funny, Samuel Shem explores the internships of Chuck, Potts, "Eat My-Dust" Eddie, Hyper Hooper, the Runt and the immortal Rhodes scholar and narrator of the novel, Roy Basch. Through these characters, the novel takes a new look at "doctor-basching." The whole tone of the book could be summarized by the words of the Runt who, when risking infection by a contagious patient says, "Do one thing for me. . . If I die take the money in my trust fund and donate it to the BMS [Best Medical School.] Make it a prize for the member of the class who first realizes the insanity of this business and drops out to do something else." (p.75). Among the unforgettable characters that Shem creates is the notorious figure of "Fats" who initiates the interns into the rules of the House. These rules include the survival techniques of "Turking" (sending a patient to another department so someone else has to take the responsibility), "Bluffing" (writing edifying, non-executed reports on the medical intervention taken — the idea being nonintervention or "conservative therapy" was the best protection of the patient's health), and the useful Law #3: AT A CARDIAC ARREST, THE FIRST PROCEDURE IS TO TAKE YOUR OWN PULSE (p.51).

But there is, in *The House of God*, a bitter double edge to the humour. Caught still laughing, the other side, the angry side of *The House of God* creeps up on you as a dark nemesis. Even the sex scenes turn bitter, as Basch describes one final tryst with a nurse:

Later on her break, she comes to the on-call bunk, hoisting up her green surgical skirt because there isn't time to undress. We two begin to take out our hatred, our loneliness, our horror with human suffering, our loneliness, our despair at human endings in the most tender of human acts, making love. . . She will not talk to me about her hatred, she will not even gesture to me about her hatred she will only fuck me for her hatred and let it go at that. (p.342).

Like most descriptions of medical training, *The House of God* has its casualties. With a clarity of style that approaches brilliance, Shem describes the plight of Potts who makes the irrevocable error of misdiagnosing "the yellow man" early in his internship. The medical hierarchy will not let him forget it. When the "yellow man" finally dies, gentle, caring Potts

commits suicide and leaps from the eighth floor to his death on the parking lot below. There the body leaves an indelible mark which effectively haunts both the minds of the hospital staff and of the readers. Barry, Basch's psychoanalyst girlfriend who provides most of the analysis of the internship year, articulates the choice facing the intern. You can "blast yourself with introspection", you can go crazy (like Eat-My-Dust Eddie does), or like Basch, you can rail at everything, be sarcastic and obnoxious, and survive. It is thus the unremitting slavery, the punitive atmosphere of the internship year that lingers after the humour in *The House of God*. The question that Chuck asks: "How can we care for patients ifn' nobody cares for us?" (p.400), strikes a chord. *The House of God* ends quietly, the whimper after the storm, when Basch weeps for his year of internship; he "weeps and curses and shouts and weeps" (p.417).

Intern (1965) by Doctor X is an earlier examination of the internship year. It was published several years after "Dr. X" finished his intership. Dr.X goes many steps further than Charles LeBaron or Samuel Shem in his effort to escape "medical" anathema. He keeps the hospital, his year of internship, and his personal identity totally disguised. As a result, the most memorable effect of this book resides in the cover. There, under the stark red captions of *Intern* by Dr. X, is a photo of the "doctor" draped in surgical attire and sporting dark sunglasses. From thereon in, however, the drama and the humour disappears.

Intern is a taped journal of Dr. X's internship. Because internship has changed drastically since the early sixties, this book offers mostly an historical perspective. The narrator does come across as the tired intern, arrogant and bad-tempered. However, he offers relatively little analysis of his internship year. What he has to say must have been more fresh to the sixties era than now. For all his anonymity, he is carefully protective of the medical profession and he never doubts the necessity of the training. He merely describes the daily rituals, the exhaustions, the long hours that demoralize most interns. In Dr. X's vision of the medical hierarchy, nurses appear not as the other underdogs of the systems, but as uncompromising harpies sent by an enterprising administration to persecute the poor intern. Dr. X dwells on the sloth, the ineptitude of the nurses, his rage exacerbated, one suspects, by the fact that they got to go home and he didn't. At first, you are inclined to be sympathetic with Dr. X and the rampant incompetence of the nurses. However, by the time he has whined, yelled and screamed enough in this journal (assiduously typed by his wife), you tend to agree with the nurses' consensus of opinion, overheard during a quiet night at the hospital, that Dr. X is a "bastard, and a cranky, ill-tempered sharp-tongued son of a bitch." (p.324.)

His sensitivity towards the patients is also minimal. He assumes that patients "naturally assume that any doctor they choose to honour is automatically going to think they are great" (p.200). He ascribes obnoxious behaviour on the part of the patients to this belief. The light does not dawn even when he witnesses a patient who has had her femoral artery rather than her saphenous vein stripped out of her leg by accident and loses use of her foot as a consequence. He never connects the "obnoxious" demands of the patients with the failure of physicians even to hear their complaints. It was books like this that probably inspired the patients' rights movement. Sometimes, his praise of doctors' refusal to give

Informed consent possesses, in retrospect, a bitter irony, as in the case of doctors failing to warn their patients of the results of a radical mastectomy because it might "keep them scared away until there's no hope at all" (p.201). Knowing now the inefficacy of the radical mastectomy and the equal success with less extreme measures of surgical intervention, passages like these are already savage anachronisms.

Women appear in *Intern* as nurse, wife and patient, and are made conspicuous by their absence in the medical ranks. One does not sense that Dr. X would welcome women into the ranks. Indeed, one suspects that Dr. X's laborious attempt at disguising himself is less to protect the medical profession and the public, as he argues, than to protect himself from the mighty wrath of the nurses.

Getting Doctored (1975) by Martin Shapiro is unusual in two respects: it is the only Canadian perspective on the medical training process, and it is written *not* as a journal but as a quasi-sociological exploration of the medical process ("quasi" because Shapiro draws principally from his own experiences at McGill). *Getting Doctored* provides many valuable insights into the Canadian process of medical education. Shapiro is very thorough in his approach, starting with the admissions process and culminating with a look at the clinical years.

He first identifies the candidate who is most likely to get into medicine as possessing "marks and pull". What this means, he argues, "is that students who have, for instance, taken time out to question their role in society and place in the university, allowing "performance" to suffer as a result . . . may be at a disadvantage." Pull, he defines as "cronyism" favouring sons of fellow physicians, of university professors, and of others the committee members know." He cites the statistic that 15% of Canadian physicians have physician parents (p.17). He argues that both cronyism and priority given to academic standing pose a form of discrimination against the poor. He also explores the predisposition of the admissions committee to admit people on the basis of conservative political views. In his year, classmates were screened for their views on Medicare. He also describes a previous class which had included a "number of leftward leaning individuals who had given headaches to the faculty by questioning health-care priorities and the medical school curriculum." It was considered a "mistake" to have allowed such people into medical school. Shapiro goes on to say that, consequently in 1969 when campus radicalism was at its peak, the number of "progressive" minds in his class was relatively small" (p.19).

Similarly, Shapiro argues that the number of women were restricted. McGill did not graduate any women physicians until 1922, the assumption of the admissions committee being that female physicians do not practise. He claims that the indignities of the admissions procedure is followed by the indignities of the lectures and the hospital where "slides of naked women are interposed between pictures of pathology specimens shown by the lecturer as a joke." (p.21)

Shapiro then proceeds to describe the process of socialization in the medical school. He depicts the typical student as "full of insecurity, unsure of how they ought to relate to those around them, believing that there is more work to cover than time to do it in." They hold "some vague fear of failure and are convinced that their classmates are better equipped to deal

with it than they themselves are." (p.27). As nothing is done to alleviate their anxieties, the students readily "accede to certain games and rituals performed by the class as a whole. . . [Thus] they slowly lose their initial identity and become redefined by the new situation." (p.27)

Shapiro then identifies the forces that help shape the student, including the long hours of study without any assurance that they have mastered what is necessary and in the face of a growing recognition that what is taught in basic sciences is irrelevant to actual medical practice. The long hours of study excludes any extracurricular activity, especially working on book reviews for a medical journal. Fortunately, Shapiro sees this as an excessive reaction to the process of medical education itself. He sees it as a response to a situation where students feel powerlessness, insecurity and inadequacy and an excessive fear of failing. He attributes much of these feelings to the indecent pursuit of the useless and the trivial by the teaching faculty. The result — an assemblage of games/rituals fashioned to fit students' obsessions with failing or doing badly. One of these evolved games/rituals is the anatomy game of "I know more than you do" where the less knowledgeable students are the invariable losers Shapiro describes other variations of this game such as "I know something you don't know", a competition on the obscure points of medicine, and finally "the numbers game" where the object is to count "oneself out of the ranks of the doomed" and then "make it a point to express concern for the welfare of a classmate who seems to be in trouble" (p.42)

These games are further exaggerated, not ameliorated, subsequent years in medical school, especially in the clinical years where students compete for the number one position in the clinician's eye. Moreover, Shapiro goes on to say, these games and rituals contribute to the formation of the new identity of doctor in the clinical years to the actual detriment of acquisition of the more important clinical skills. As a result, work becomes little more "than surmounting a series of obstacles". Like LeBaron in *Gentle Vengeance*, Shapiro argues that in the process the students "become less sensitive to people and problems external to this work setting." "They even begin to accept the legitimacy of the games they are playing and the limitations of that experience." The price? "In important ways, their examination-centered work compromises and diminishes their sense of their own possibilities, along with their ability to realize them" (p.74).

Throughout *Getting Doctored*, Shapiro gives a convincing synopsis of the "gentle vengeance" (in LeBaron's terms) that medical training exacts. It is the only book I discovered that attempts to link all four years.

The residency years seem to be captured in words mainly by women specialists in recent years, perhaps because they are relative newcomers to the field, and as such, are more likely to document their experiences.

Like Dr. X's *Intern*, Elizabeth Morgan's *The Making of A Woman Surgeon* is already dated in terms of some of her actual experiences. However, like *Intern*, it has some historical significance. Morgan describes going to Yale as one of seven women in the 1960's. She provides historical insight into a new era "where women were no longer simply fascinated by surgery; they believed they could become surgeons" (p.47)

However, Morgan's *The Making of A Woman Surgeon* is disappointing in many ways. Like Dr. X, she fails to provide us with much analysis. When her friend Cathy commits suicide, for instance, near the end of medical school, she is at loss to find any plausible reasons. She only queries as to what is it about medical school that might drive a woman to kill herself. She does briefly discuss the imposed isolation and loneliness of women in medicine and the feeling of being in a glass bowl on display, but she does not probe very far, and her consideration of the underlying issues is cursory and unsatisfying. However, she does discuss the importance of the few female role models she had such as a Dr. Janet Rone, a neurosurgery chief resident. She also discusses the difficulty of building credibility as a woman doctor with both male colleagues and patients (of both sexes). She is also honest about the effect of long hours of internship and then surgery on her personality, making her irritable and unreasonable. Although for the most part, she is circumspect about her personal life, she does describe the implicit conflict she felt in being both a surgeon and a woman, a conflict that often created a gulf between her and her male colleagues. The conflict was made greater because of the implicit assumption that all good surgeons were male. As she writes herself, "And I was changing. I didn't realize until five years of general surgical residency was over, but I was being trained by good male surgeons to act like a good male surgeon" (p.154). For the other woman entering surgery, Morgan hopes that "they would learn, sooner than I had, and with less struggle how to be a surgeon and a woman at the same time" (p.330).

On the other hand, Jane Patterson's *Woman/Doctor* is a portrayal of a woman in the gynecology with a rather unexpected twist. The cover of the book typifies the typical Harlequin romantic heroine, only with Mr. Operating Room instead of "Mr. Right" in the background. However, it is a "Harlequin romance" that Harlequin would never publish. Not only does the heroine fail to get the ring in the end, but she turns out to be gay. In fact, this book turns out to be a more serious look at medicine than either the cover or the opening few passage convey. In *Woman/Doctor*, Jane Patterson traces her residency through the sixties and early seventies. Unlike many of the authors of books I surveyed, she is less protective of her personal life, even though she has possibly more reason to be so. Like many of the other books, her book is haunted by casualties, people who do not quite survive the inequities and stresses of the medical system. Jane Patterson's *Woman/M.D.* is admirable because of its probing honesty, and its study of a woman's evolving interest in changing the delivery of the health-care system.

However, the strongest and most powerfully evocative piece on residencies was Michelle Harrison's *A Woman In Residence* (1982). In this book, Michelle Harrison describes her attempt to balance a part-time residency with raising a child as a single parent. Written in the form of taped excerpts, *A Woman In Residence* is a moving indictment of not only how pernicious the present health-care system can be in its treatment of women, but also how near impossible it is still for women to balance their education and personal lives. Parenting is almost a "closet activity" because the time it demands tips the balance in residencies, where dedication is measured in direct hours of work. Indeed, when Michelle Harrison first becomes pregnant, nobody believes that she

really wants a child and the program director chides her by saying, "But how did *you, a doctor*, get pregnant." "The usual way," Harrison answers flatly (p.10).

Harrison goes on to write simply but with strong evocative imagery of her experiences in her part-time residency. Like Shapiro, she is aware of the rituals of medicine, but she condemns them further seeing them as part of pornographic approach to women's health. For instance, of women in operating rooms she writes:

In the OR we hang legs on stirrups. We put the women to sleep so she is loose and we hang her. A woman with her legs in the air cannot fight. She cannot protest the remarks about her fatness, her hair, her scars, the shape of her labia, the size of her clitoris. She cannot pull her legs together to protect herself. I stop my thoughts in order to learn what I have to know and to go along with what I have to do. (p.38).

Ironically, it is the other women residents who resent Harrison's part-time status the most. Eventually, she is forced to give up her residency to look after her child. Of medical training and its effects, she writes powerfully:

If I were to have an eye removed, then I would forever be a person with only one eye. If I were to take poison without spitting it out, I would be a poisoned person. I might survive, but I would be damaged. Medical training is no less violent than surgery or poisoning. It leaves women and men no less scarred or no less without the organs that have been removed.(p.258).

Tillie Olson once wrote that "we who write are survivors." It is important to recognize that all of these doctors who write are survivors, and bear witness to us all. They all, each in their own way, pay tribute to the impact of medicine on our lives.

Regardless, there is obviously a market for you teeming writers who wish to collect royalties on your experiences in medical school. I have some words of advise garnered from this fruitful survey. *One:* Record your daily triumphs and despairs on the taperecorder, hidden furtively on your person. Gain a reputation as a mumbling eccentric. *Two:* Wear dark glasses and a surgical gown to blend in with your class-mates. *Three:* Change your name to X or Y. *Four:* Apply for your internship in the Yukon. Good Luck!!!

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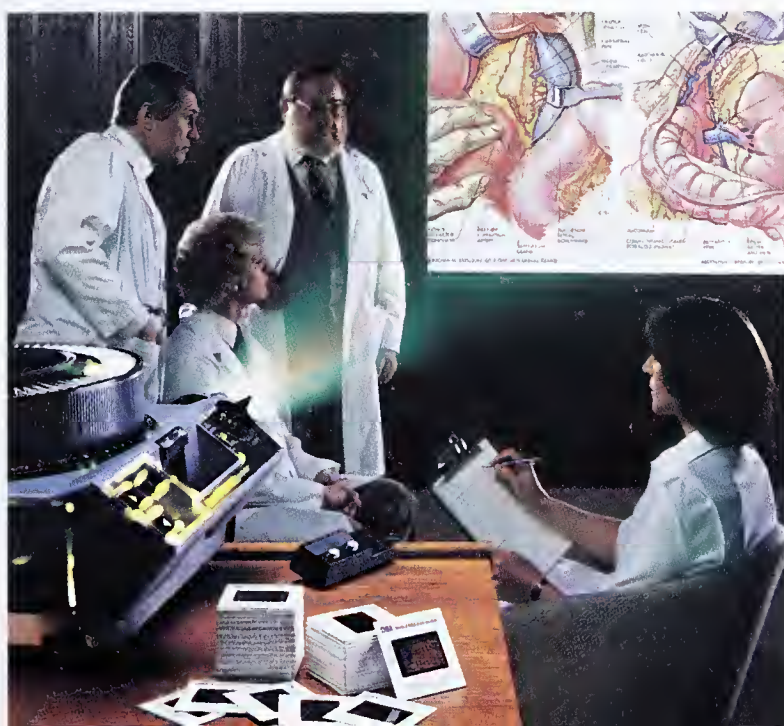
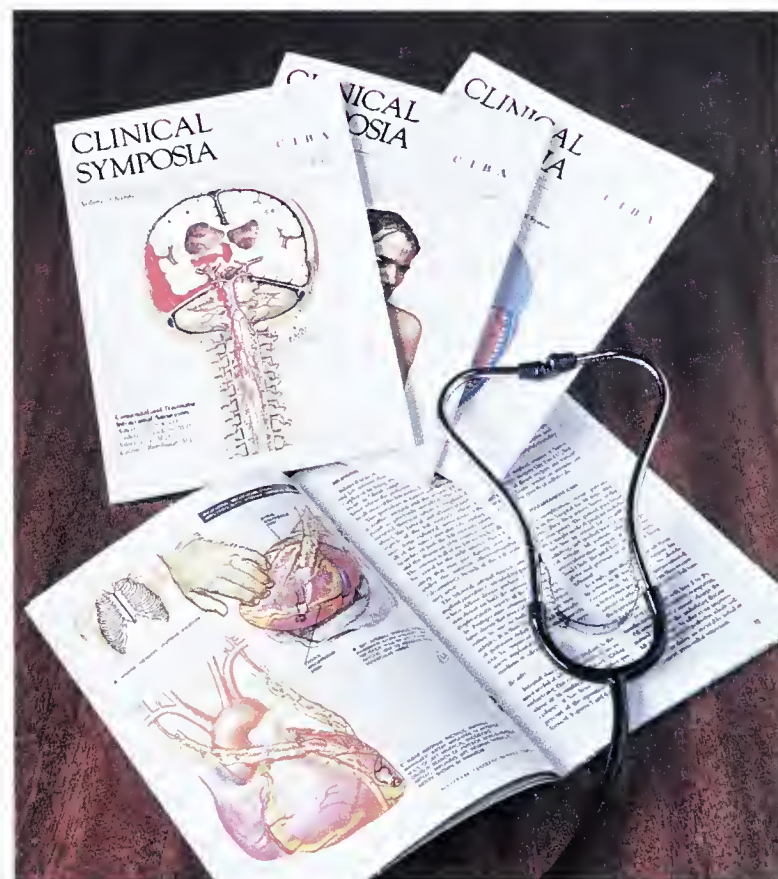
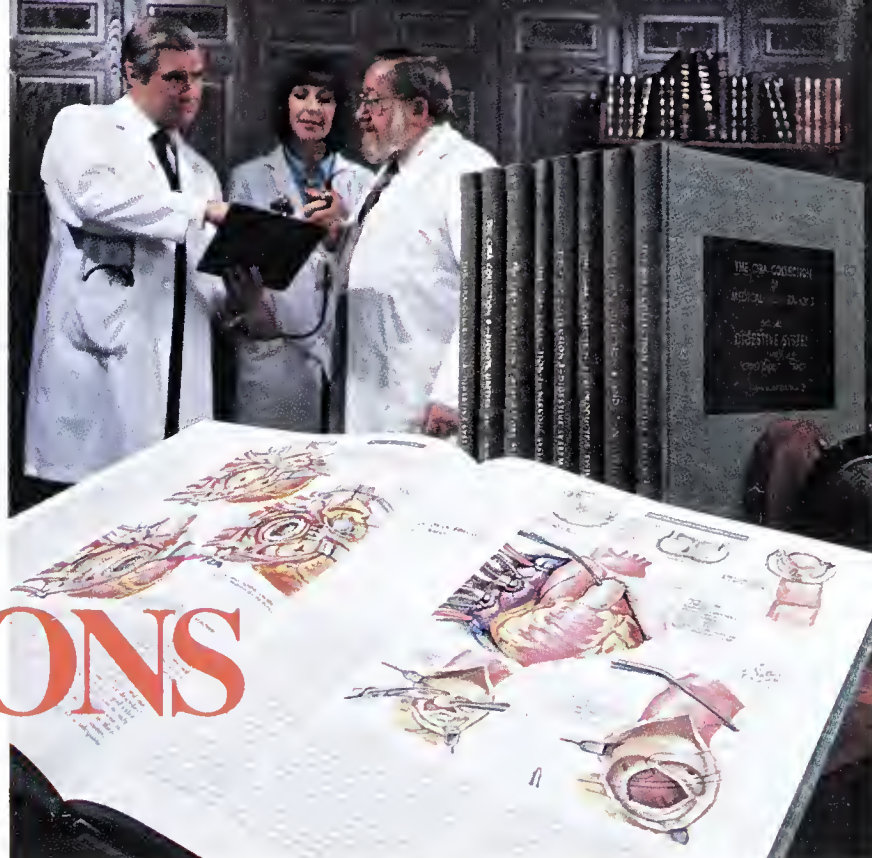
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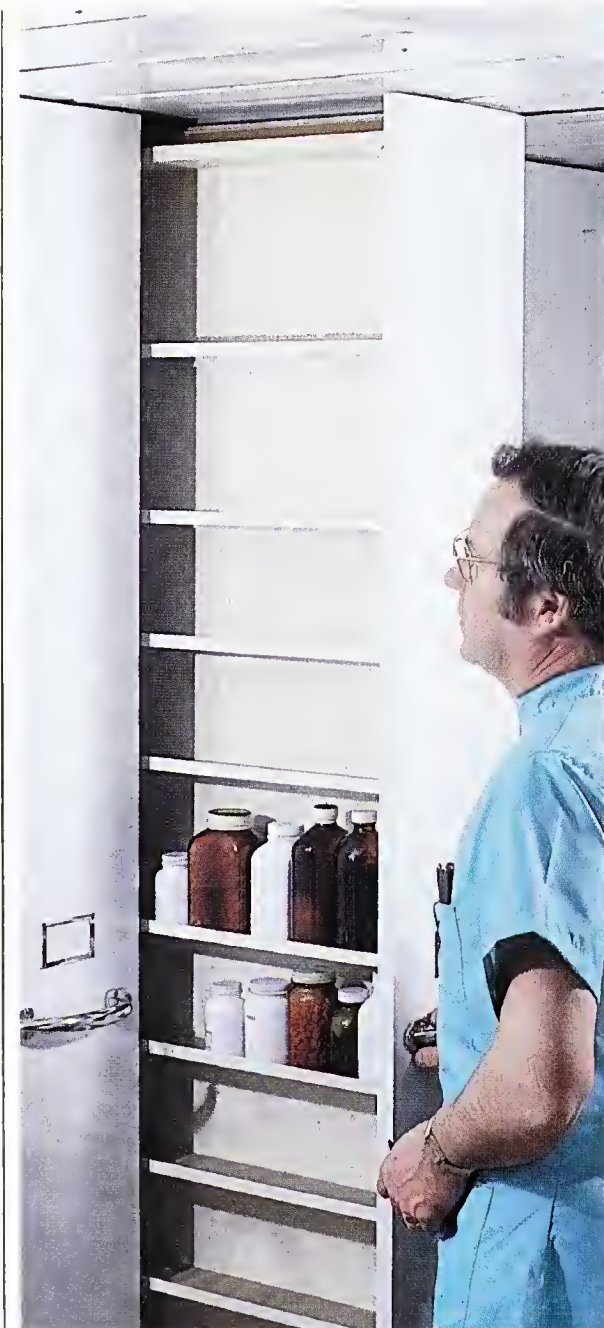
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